# ENGINEERING NEWS-RECORD

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UNIVERSITY MICROFILMS IN
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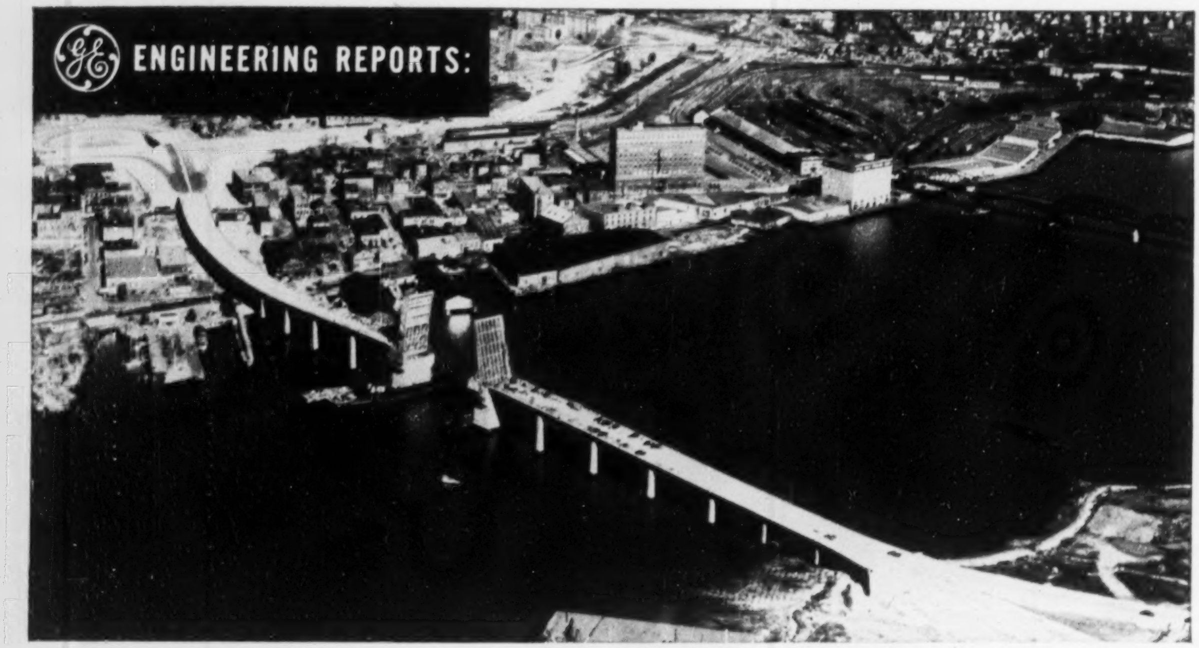


**MOTORISTS SAVE 10 TO 30 MINUTES** crossing from Norfolk to Portsmouth via the new G-E equipped bridge and tunnel. Bridge is 4-lane, 2135 ft between abutments. Bascule span is of the double-leaf, rolling-lift type with leaves each 90 ft long.

# Bridge's drive system helps speed 29,000 cars per day

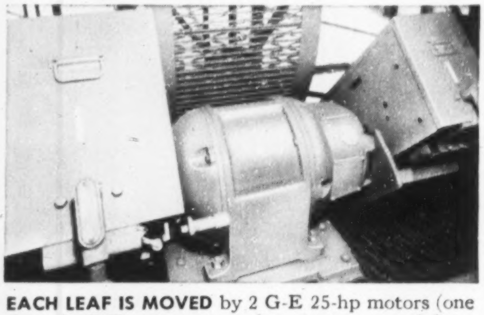
## G-E equipment at Portsmouth - Norfolk Bridge gives fast movement, positive control of leaves

The new 4-lane bascule bridge across the Elizabeth River at Norfolk, Va.—part of a combined bridge and tunnel project built for the Portsmouth–Norfolk Bridge Tunnel Commission—is currently handling over 29,000 vehicles per day. Ability to handle this heavy traffic flow is due in part to electric equipment supplied and co-ordinated by General Electric.

In helping to develop the bridge's drive system, G-E engineers worked closely with J. E. Greiner Co., consulting engineers, Tidewater Construction Corp., engineers and contractors, and Tuck and Kendall Inc., electrical contractor. Result of this co-operation: a simple, dependable drive system that expedites traffic because it is easy to operate and provides positive-action control of bridge leaves for fast movement and smooth, safe seating.

This is one more example of how G-E engineers can help your engineers or consultants on electric equipment for heavy construction projects. For other examples of how G-E application engineering has been utilized on many of the important bridge "firsts" throughout the country, contact your local G-E Apparatus Sales Representative or write for a copy of GED-1982. General Electric Co., Schenectady 5, New York. 664-26

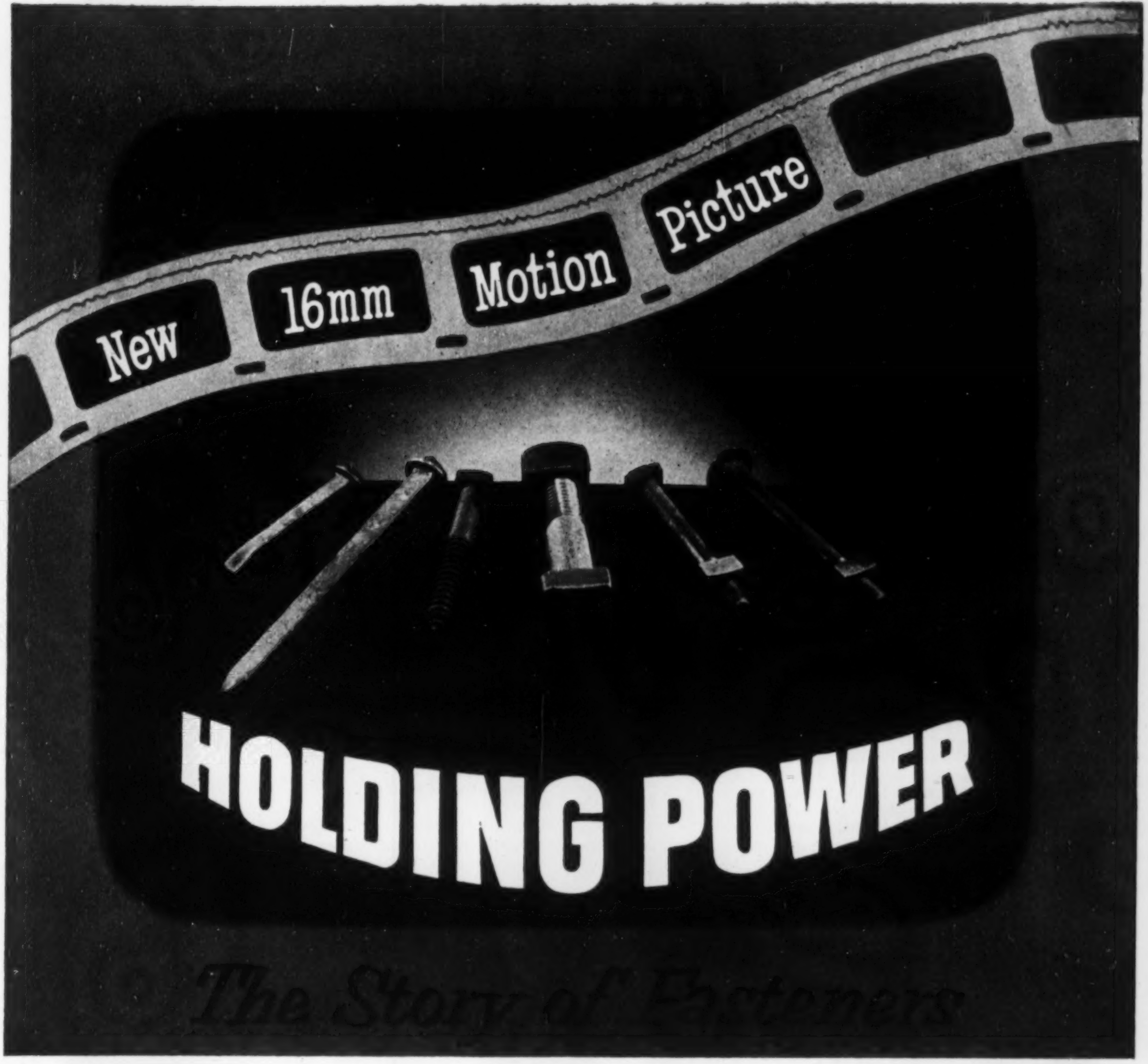
**POSITIVE-ACTION CONTROL** of span motors is centered in this G-E operator's desk. Fine-scale selsyn dial pinpoints position of each leaf during seating.



**EACH LEAF IS MOVED** by 2 G-E 25-hp motors (one shown). G-E motor control center, operated from desk, controls these and tail locks, gates, barriers.

**Engineered Electrical Systems for Heavy Construction**

**GENERAL ELECTRIC**



This important new film dramatizes the story of fasteners. It delves into such common, everyday items as machine bolts, nuts, rivets, track bolts and spikes, and also describes roof bolts, high-strength bolts, oil-well sucker rods, and a wide range of special fasteners. The film takes you behind the scenes in our modern fastener plants. It shows how fasteners are made, and explains the vital part they are playing in industry.

"Holding Power" is in color, with sound. It is on 16mm film, and has a running time of approximately 30 minutes.

"Holding Power" is an ideal film for showing to distributors, consumers, and others closely associated with fasteners. It is also an interesting, highly educational picture for general audiences. There is no charge, except for the return postage. If you would like a print for showing, fill out the coupon, selecting a date well in advance, and mail it to Publications Department, Bethlehem Steel Company, Bethlehem, Pa.

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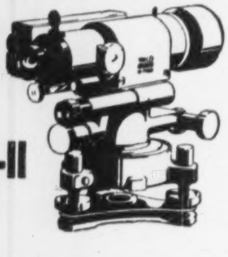
PRECISION FARMING
WILD
HEERBRUGG



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# ENGINEERING NEWS-RECORD

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Editorial offices, 330 W. 42nd St., New York 36, Tel. LOngacre 4-3000
Number of copies of this issue printed: 63,156

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**Robert F. Boger**
Publisher

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**May 13, 1954** **ENGINEERING NEWS-RECORD** **Vol. 152, No. 19**

Member ABC and ABP

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 North Broadway, Albany 1, N. Y.**

**Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Donald C. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

**Subscriptions: Address correspondence to Engineering News-Record—Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.**

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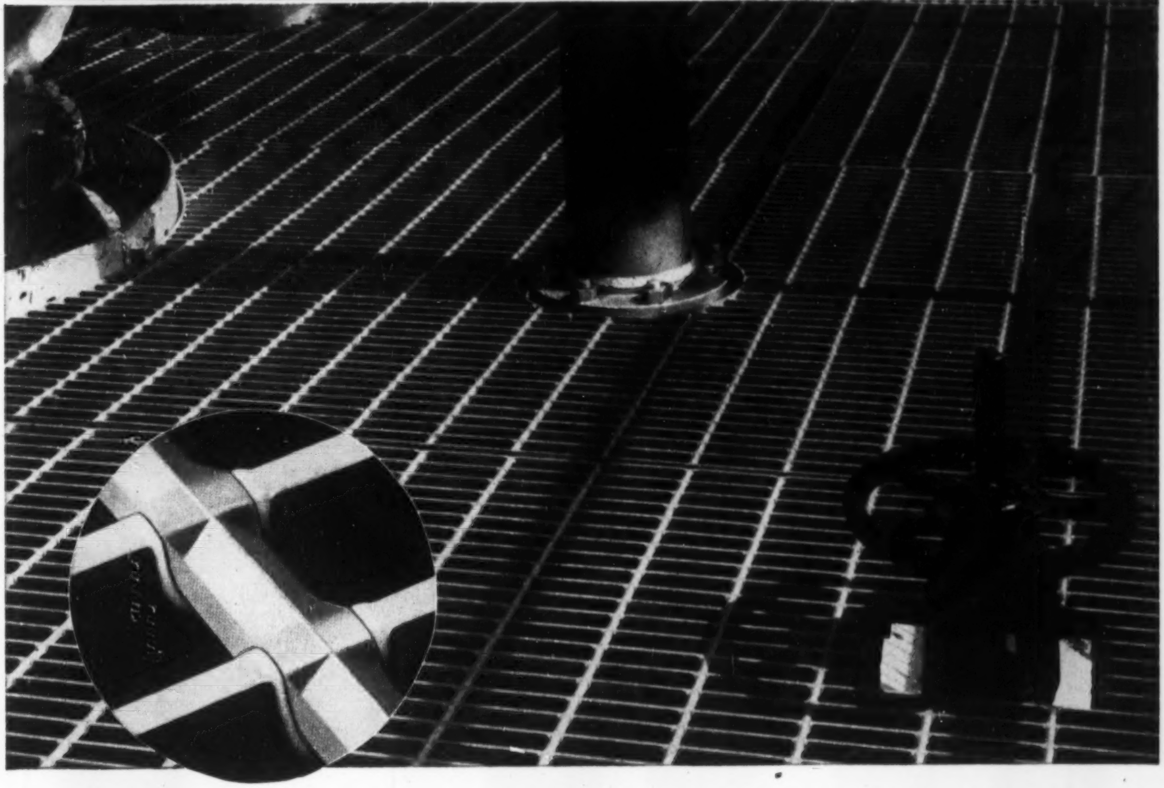
Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada $8.00 a year; $12.00 for two years; $16.00 for three years. Other Western Hemisphere countries, $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries, $20.00 a year; $30.00 for two years; $40.00 for three years. Entered as second class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of Mar. 3, 1879. Printed in U. S. A. Copyright 1954 by McGraw-Hill Publishing Co., Inc.—All Rights Reserved.



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Its patented direct drive is one reason why a Le Roi-Transo Mixer delivers top money-making performance. It eliminates heavy chains, ring gears, sprockets, and bevel gears — and the weight and maintenance troubles that go with them.

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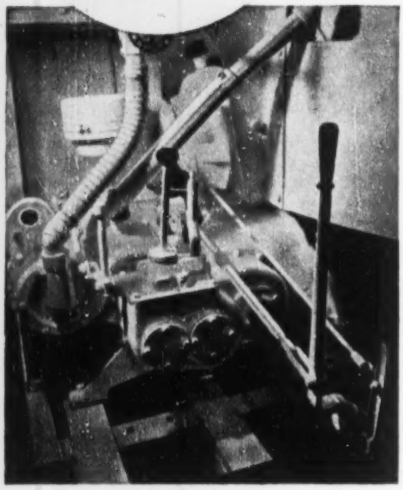
Yes, sir, feature for feature, a Le Roi-Transo is your best mixer buy. Ask your Le Roi-Transo distributor to show you. Or, write for bulletin.



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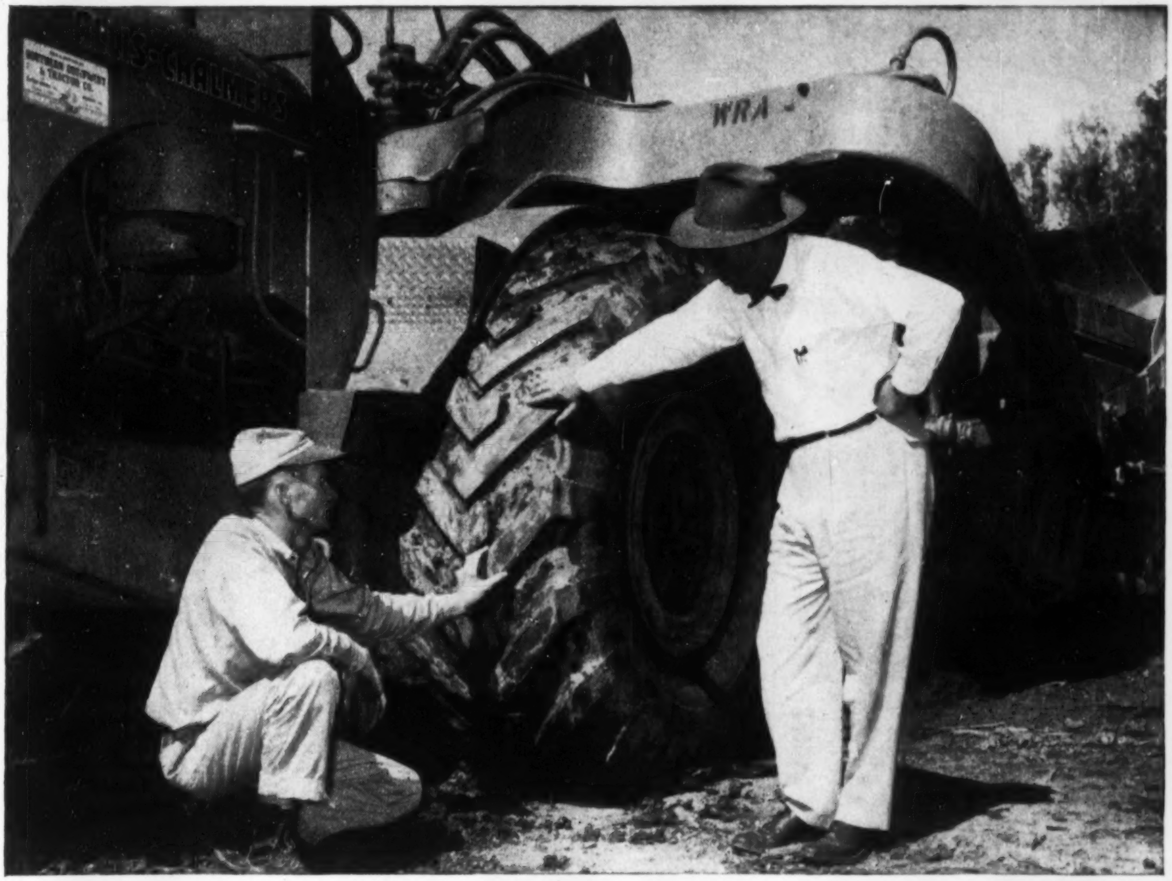

## Super Traction tires pull through mud to help build a highway

THIS tractor scraper is at work on U.S. Highway 190 near Livonia, La. It is one of the units of W. R. Aldrich & Co., a Baton Rouge firm specializing in heavy construction projects. Plowing through the area's heavy, muddy soil under 20-ton loads could easily cause the scraper to bog down, tie up production, waste valuable time.

But the company avoids this trouble, uses B. F. Goodrich Super Traction tires—tires built to pull through such rough going faster, easier.

Thick, widely-spaced Super Traction cleats take a deep bite. Yet the entire tread contacts the soil, makes a big footprint for plenty of flotation. This B. F. Goodrich tire pulls without sinking, keeps you on top of the soil and on schedule.

Specially-compounded rubber in the Super Traction sidewall guards against cuts, resists cracking. And the patented B. F. Goodrich nylon shock shield protects the tire body from bruises.

Layers of strong nylon cords under the tread stretch together under impact to absorb and distribute shocks. You gain 4 ways: more hours of service, more recappable tires and longer service per recap, increased bruise resistance and less danger of tread separation. All these advantages, yet the nylon shock shield costs you nothing extra.

The Super Traction is just one of the complete B. F. Goodrich line of tires for every type of off-the-road service. See your B. F. Goodrich retailer. His address is listed under Tires in the Yellow Pages of your phone book. Or write *The B. F. Goodrich Co., Tire & Equipment Div., Akron 18, Ohio.*

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## READER COMMENT

### Education needed

SIR: Upon reading your article on the unionization of sub professional engineers working on the Ohio Turnpike (ENR, March 18), it appears possible that the O.S.P.E., the N.S.P.E. and the A.S.C.E. could "break the backbone" of this move immediately, by either having the Turnpike Commission relieve the contractors of their layout obligation and turn the work over to private engineering firms (or individual private survey parties), or by having the contractors sub-let this phase of the work through the same channels.

The engineering societies, industry, municipal, state and federal government officials and the armed services have been building up the trump hand for unionization for the last 25 years.

The societies have done little to encourage graduate engineers to enter private practice where they could enjoy the professional prestige and public acceptance granted to doctors, lawyers.

Industry has classified engineers handling maintenance problems in the same category as shop help. Engineers on product design and research receive little acclaim and less financial remuneration for their efforts. An engineer is a peculiar breed of person. Frequently public acclaim (in the company) of his accomplishment means as much as a pay raise, but his wife can't always agree. In private practice he stands a better chance to get both.

Municipal, state and federal government officials have handled their engineering personnel much the same as industry does because the engineer at the "top of the stack" in each office has permitted the conditions to exist. He hasn't grown up to professional pay standards for himself so his help suffers with him.

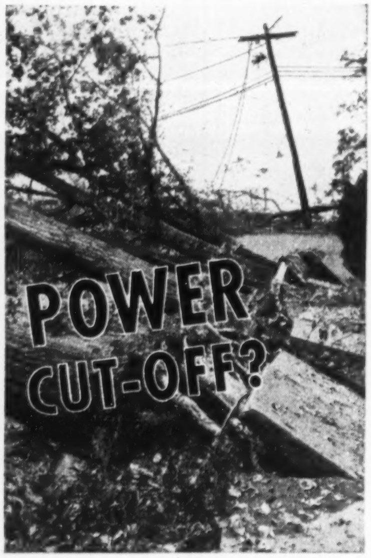
In another way the municipal, state and government officials, however, are equally uneducated as to the problems of an engineer.

Except for the recently discussed low bidding practice, they pay the ethical rates for outside consulting services, but only a few firms can get the breaks. The requirements set forth in questionnaires issued by those awarding large engineering assignments tend to eliminate the small firms which could employ and encourage more engineers to strive for the professional status.

The structure of small but fully qualified firms looks silly when written

*(Continued on page 10)*

ARE YOU PREPARED FOR A
Sudden



Violent windstorms and other severe weather conditions are often the cause of sudden power failures. Many hours are sometimes required to repair the damage to power lines.

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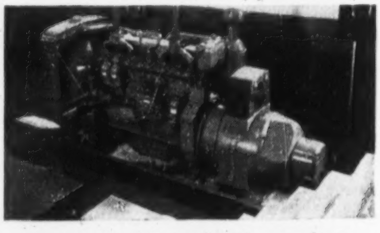

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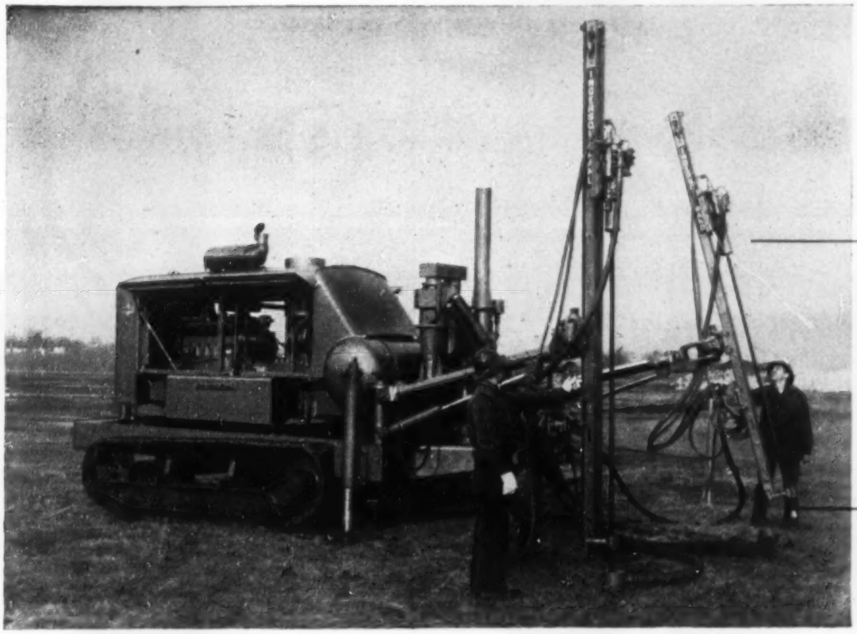
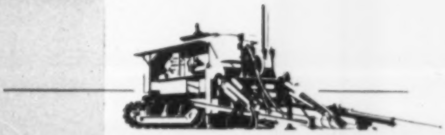
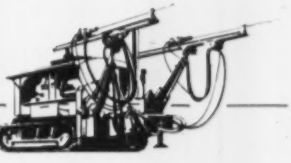




Booms can be lowered all the way to ground level for drilling horizontal or inclined toe holes.



Drillmaster setup for drilling breast holes in a face or heading.

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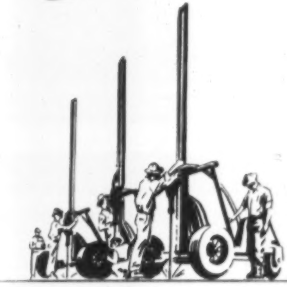

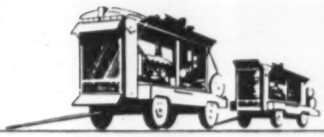

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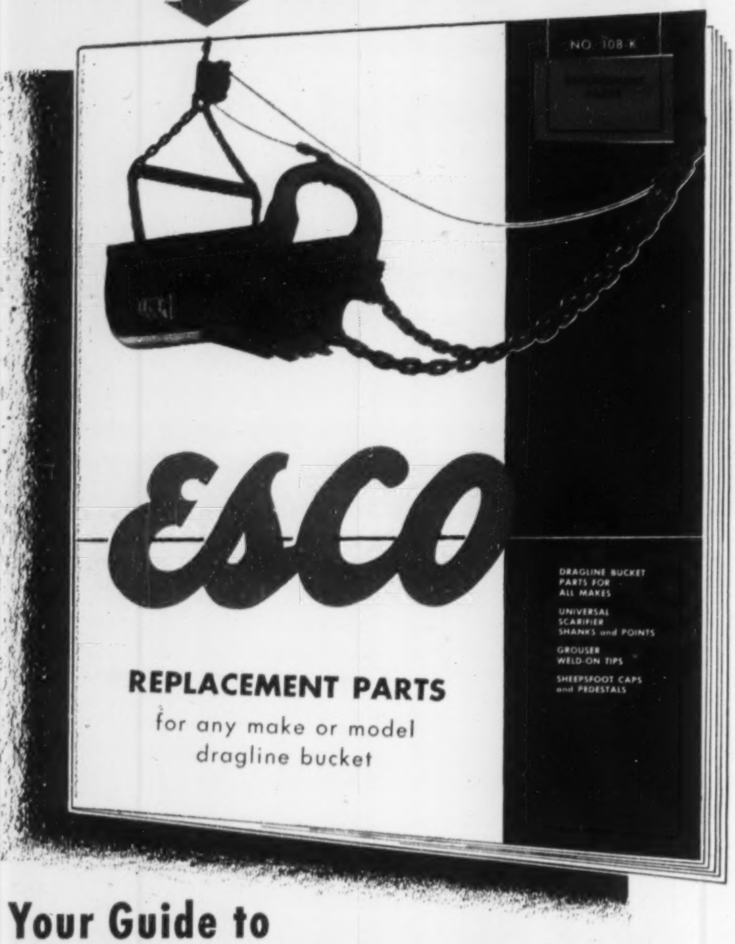

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out on some of the "big time" questionnaires issued by the Army Corps of Engineers, state highway departments and others.

It's time for a change to be originated quickly by the engineering societies. I am not so sure, however, that the societies are fully interested in recognizing the trouble because their memberships also include the offenders.

JOSEPH G. CONRATH
*Erie, Pa.*

### We should have said so—

SIR: In the article "Inner—outer prestress produces record span" (ENR April 8, p. 57), you give an extremely interesting account of the world's longest continuous, prestressed concrete bridge.

Since you refer to the many interesting design features of this 2,628-ft, 20-span bridge, which required unusual techniques in prestressing, we believe that your readers would be interested in knowing that it was designed by Freyssinet-trained engineers retained by the contractor, and that Freyssinet methods were used in all prestressing.

R. M. DUBOIS
*President*
*Freyssinet Company, Inc.*
*New York, N. Y.*

### Arch was not record size

SIR: It is with considerable interest that I read your article, "Record three-hinged arch spans 278 ft," in the April 8 issue, p. 33.

Since it is always eye-catching to report the unusual, I fully appreciate this form of presentation. However, strictly from the point of view of accuracy there are three-hinged steel arches of larger span in the U. S.

I call your attention to ENR May 25, 1950, p. 40, in which you report: "A new record for steel-arch hangar spans has been set by the three hangars just completed at the New York International Airport. The arches span 302 ft . . ."

These structures, which we designed for the Port of New York Authority, are three-hinged plate girder arches and, in this detail, differ from those you reported at the Greater Pittsburgh Airport .

ROBERT ZABOROWSKI
*Roberts & Schaefer Co.*
*New York, N. Y.*

In 1949 and 1950, we constructed a research hangar for the National Advisory Committee for Aeronautics at

Langley Field, Va. The arches in this hangar were of the three-hinged type, and the span was 330 ft.

J. M. COLEMAN, JR.
*Vice president*
*Wise Contracting Co.*
*Richmond, Va.*

In Volume 26, page 299, of the old ENGINEERING RECORD, there is reported the use of three-hinged steel arches to support the roof of the Manufactures and Liberal Arts Building at the World's Columbian Exposition, Chicago, in 1893. The span of those arches was 368 ft measured center to center of end pins.

W. H. BEERS
*Chief Engineer*
*Dan River Mills, Inc.*
*Danville, Va.*

In the Gallery of Machines constructed in Paris for the Universal Exposition of 1889, the three hinged arches had spans of 362 ft. The Gallery of Machines was demolished after the end of the exposition.

H. VALLET
*Professor de Constructions*
*Metalliques*
*L'Ecole Centrale des Arts*
*et Manufactures*
*Paris, France.*

## CALENDAR

**National Fire Protection Assn.,** Hotel Statler, Washington, D. C., May 17-21.

**American Water Works Assn.,** annual conference, Seattle, Wash., May 23-28.

**California Society of Professional Engineers,** convention and trade show, Hotel Mark Hopkins, San Francisco, May 27-29.

**Column Research Council,** Engineering Societies Building, New York, May 27-28.

**National Society of Professional Engineers,** Schroeder Hotel, Milwaukee, Wis., June 9-12.

**American Society for Engineering Education,** University of Illinois, Urbana, June 14-18.

**American Society of Civil Engineers convention,** Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., June 14-19.

**American Institute of Architects convention,** Statler Hotel, Boston, Mass., June 15-19.

**Conference on Thin Concrete Shells,** Massachusetts Institute of Technology, Cambridge, Mass., June 21-23.

**Third International Water Supply Congress,** London, England, June 20-23 (Secretary General, L. Miller, 34 Park Street, London W 1).

**Pan American Congress on Roads,** Caracas, Venezuela, July 11-21.

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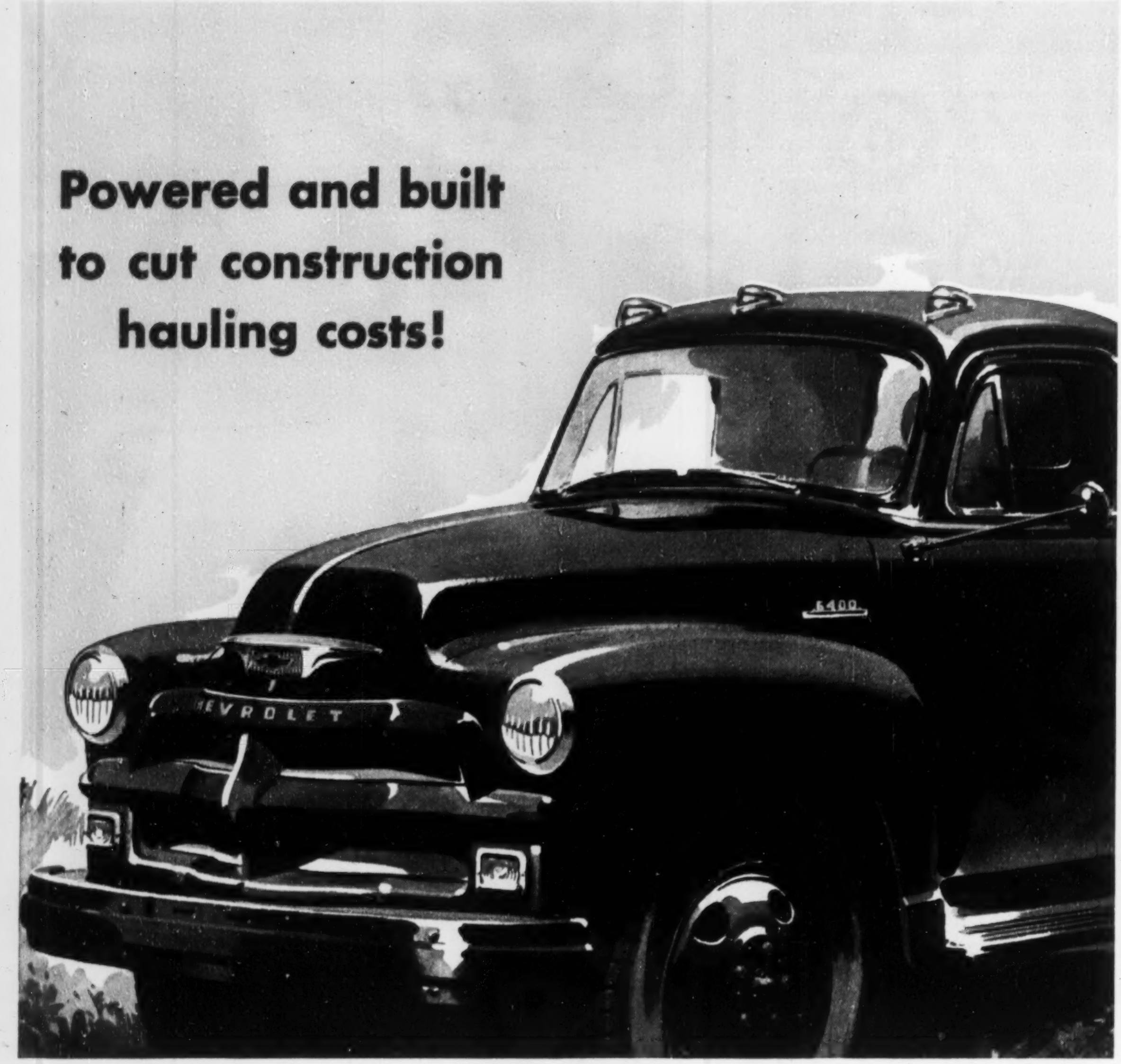
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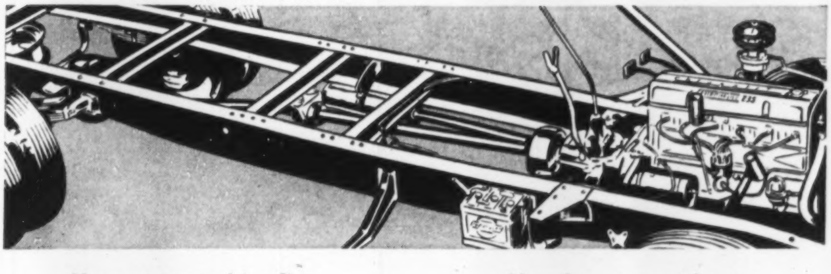

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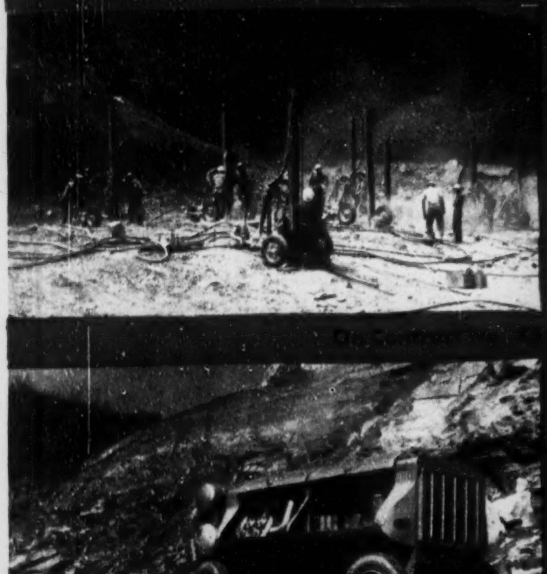

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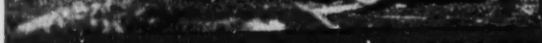

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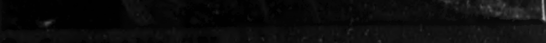

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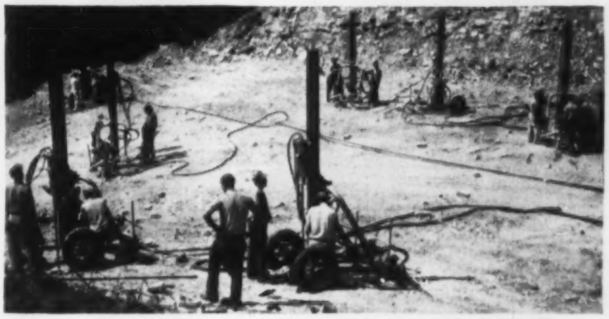
Out of 185 wagon drills on the West Virginia Turnpike . . . **117** were Gardner-Denvers! **47** Gardner-Denver Two-Stage Water-Cooled Portable Compressors supplied air on this job! That's the report from 26 West Virginia Turnpike contracts held by contractors assembled from all parts of the country.

On Contract No. 21



# ET THE DRILLING PACE...

## on the West Virginia Turnpike

On Contracts No. 23B & 24A

On Contract No. 23A

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## MAY 13, 1954

Vol. 152, No. 19

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# THE CONSTRUCTION WEEK

**TOLLS DOWN, TOLLS UP**—Neighboring toll turnpikes were showing differing financial pictures for the first quarter: Pennsylvania's Turnpike revenues dropped, New Jersey's rose.

Penn Turnpike officials said that revenues for the first quarter of 1954 were down about $500,000 from the corresponding period last year; the New Jersey road reported a rise of 10.8% for the first quarter of 1954.

Pennsylvania officials weren't officially worried: They pointed out that collections are still well ahead of original estimates, on which bonds were based.

**CONTROLLED ACCESS**—Madison County, Ind., planning commissioners took a bold step to insure that a new highway by-passing the city of Anderson will remain clear for through traffic: They directed that all business establishments wishing to re-locate near the new road be restricted to a five-block area—and that none of them be permitted direct access to the by-pass.

**COLONEL ENGINEER?**—In the event of an emergency, North Carolina's highway division engineers would have a new title, if the commission approves a suggestion from the state's Civil Defense director:,

The new title might be "Colonel."

Brig. Gen. Edward F. Griffin, staff defense director, suggested the rank be given in the Civil Defense organization, so that health, transportation and other emergency services could be organized under CD for emergency use.

**NARROWS BRIDGE?**—Long-discussed plans for a crossing of the Narrows (connecting upper and lower New York bays) between Brooklyn and Staten Island may actually be closer to fruition than indicated up to now.

Port of New York Authority officials are talking about such a bridge being "in use" by 1960.

Plans for such a structure have been mentioned off and on for some years—most of them centering around an eight-lane suspended structure, to cost in the neighborhood of $70 million.

**NO RAIDING**—An apparent turn-around by CIO's steelworkers may spell doom for the long-sought "no raiding" pact between AFL and CIO.

The steelworker decision (coupled with objections of AFL's powerful teamsters and carpenters) left AFL's George Meany and CIO's Walter Reuther with an extremely shaky foundation for their peace plans. Pundits figure steelworker President McDonald changed his mind after a recent huddle with John L. Lewis and Dave Beck.

# B. F. Goodrich announces

# Koroseal now used in roofing helps prevent fires like this

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FLEXIBLE MATERIALS BY

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**INDUSTRIAL PRODUCTS DIVISION**

# WASHINGTON OBSERVER

**Killing of the Taft-Hartley bill** in the Senate (page 31) leaves construction industry labor relations just where they were. And the Administration has no plans to try to revive any amendments this year. AFL building trades workers lose one big issue they wanted settled: whether a union could picket a whole construction project to get at one contractor participating among a group. That's still unlawful as the law stands unchanged.

•

**Threat of an Asian war may cause step-up in military spending**—despite current budget-balancing policies of the Administration. But if the decision is finally made to add additional billions to the military's spending for the year beginning June 30, there's not likely to be much increase in construction spending. Reason: Big commitments for airbases for bigger Air Force are already made and scheduled.

•

**The Administration is pushing for action on the housing bill.** Senator Capehart wants to begin writing the new language next week. He wants to hold to a minimum a recurrence of the "scandals" that stopped the legislation in its tracks several weeks back. Writing the restrictions will take the Senate committee well into June—which means that the bill will probably become part of the end-of-the-session turmoil. As things stand now, congressmen hope to go home by Aug. 1.

**FHA Chief Mason this week held meetings with an industry committee** of lenders, builders, and building supply officials to check some of the provisions to be submitted to Capehart's committee. Mason is also meeting with an eight-member consumer committee.

•

**House Banking Chairman Jesse Wolcott is holding hearings on housing, too.** The House has already passed the original version of the housing bill, which leaves the House committee in an unhappy spot. So Wolcott is holding executive sessions to get himself a better foothold. Technically, Wolcott has to go to the conference committee with the bill the House approved—it was passed before the scandals broke, and hence has no language specially written to plug the loopholes that have been spot-lighted by Cole and the Senate committees.

•

**Don't look for a bill to reorganize the housing agencies** until the Omnibus Housing Bill itself is completely in the clear. Reason: Politicos will have a tough-enough time with the basic legislation, without getting sidetracked over the reorganization issue.

**Talk about the White House readying the reorganization plan** grows out of the fact that Congress has to be given 60 days to approve or disapprove such reorganizations. That means that if Eisenhower wanted the reorganization to go through this session, he would have to submit it by June 1 to be on the safe side as far as the 60 days is concerned.

•

**Note Eisenhower's comment** on signing the new Highway Aid Bill: He pointed out that the new federal money going out equals the amount of revenue coming from the federal gasoline tax. That "links" federal highway aid to the tax, which highway forces consider temporary and unrelated to highway aid. Congress turned down recommendations to link the tax to aid in passing the bill, but Eisenhower stated it as "policy" anyway.

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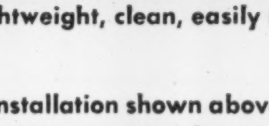

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# U.S. prepares to implement St. Lawrence Seaway plans

## Public corporation authorized to construct $105-million U. S. facilities, after negotiating unsettled points with Canadians

Although it had been a political controversy for a quarter century, it took only a voice vote by the Senate last week to put the final stamp of approval on U. S. participation in the St. Lawrence Seaway project.

The bill, which the President was eager to sign this week, provides for the creation of a St. Lawrence Seaway Corp. to construct navigation facilities on the New York side of the international section of the St. Lawrence River at a cost of $105 million. And, the legislation authorizes the corporation to cooperate with the St. Lawrence Seaway Authority of Canada in carrying out its mission.

Despite fast action by House and Senate on this legislation, no early start of construction on the Seaway is anticipated because of numerous questions that must be answered before bids can be called. The spring of 1955 now looks like the earliest date for the start.

Chief question is that of location of the navigation channels and locks. The bill just passed by Congress requires that the locks and canals be "in United States territory," but the current plans of the Canadian government are for navigation facilities on the Ontario side of the river (see map). An agreement between the two countries on that point must be reached before the important matter of apportioning the costs can be settled.

Approval of the International Joint Commission on locations as finally agreed to must be obtained. Also, the U. S. St. Lawrence Seaway Development Corp., must have assurances from its counterpart in Canada that the wholly Canadian sections of the new ship canal farther downstream will be completed concurrently with the work in the International Section. These Canadian sections are the Soulanges and Lachine locks and canals above Montreal which are estimated to cost $173 million.

**• First step appointments**—First step in creation of the St. Lawrence Seaway Development Corp., will be appointment by the President and confirmation by the Senate of the administrator and deputy administrator. These men probably will be named and confirmed within 30 days after the bill is signed into law. Less important to the prompt functioning of the corporation will be the creation of a five-man advisory board to counsel the administrator. Board members probably can be confirmed by the Senate before Congress adjourns. If not, the board can be filled out by recess appointments. The corporation can start organizing as soon as the administrator is confirmed.

**• Canada will go along**—Despite the anti-climactic reaction of Canadians to congressional approval of U. S. participation, there is little question but that Canada will go along with the joint Seaway project. In Washington less than two months ago Canadian Secretary for External Affairs Lester B. Pearson reiterated his government's preference for joint construction and operation of the Seaway. And last week's visit of Canadian Governor General Vincent Massey left no doubt that Canada still wants an international undertaking.

For its financing, the corporation administrator quickly can get together with Treasury Secretary Humphrey to set the terms of the revenue bonds that the law says the Treasury shall buy. The legislation authorizes the corporation to issue up to $105 million of revenue bonds to the Treasury, limited to 10% of the bonds the first year and not more than 40% in any year thereafter. Both the total authorization and the first year allowance appear ample to cover cost estimates.

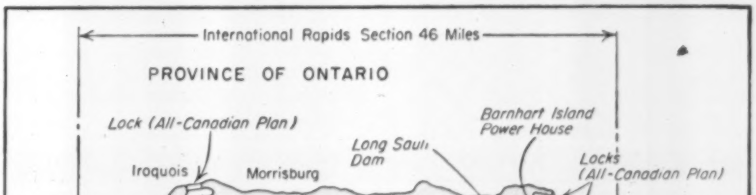
**• 1941 drawings may be used**—Drawings and specifications for navigation facilities on the New York side were prepared in great detail by the Corps of Engineers when the ill-fated 1941 agreement was before Congress. If Canada agrees to building the ship canal on that side, these drawings can be updated quickly.

Here is the work that the U. S. corporation will do under the Seaway bill:

**• Thousand Islands section**—Less than $2 million of rock dredging is estimated to be necessary in this section. The work will remove rock shoals to a controlling depth of 27 ft at present datum plane with a minimum channel width of 450 ft.

**• International Rapids Section**—Major U. S. works are in this 46-mi section. They comprise two lateral canals on the south side of the river, with three locks to by-pass new dams to be built as part of the New York-Ontario joint power project. The canals will have a 27-ft navigable depth, and the locks will be 30 ft deep over the sills.

Included are: (1) The Point Rockaway or upper canal about three miles long, at least 440 ft wide at the bottom of the cut, with one lock at least 800x80 ft; normal lift would be one to five feet; and (2) the Long Sault or lower canal, about eight miles long and 440 ft wide at the bottom of the cut, with two locks at least 800x80 ft;



**U. S. PART** in St. Lawrence Seaway plan involves only the International Rapids section.

normal lock lifts would be 43 and 38 ft.

At the upper end of the Long Sault canal will be a guard gate to permit unwatering and repairs when necessary.

In the Soulanges and Lachine sections of the new waterway Canada will construct works of equal capacity and also will increase the controlling channel depth of the Welland Canal from 25 ft to 27 ft. The seven lift locks and one guard lock of the Welland Canal already are 800x80 ft in plan dimensions, with 30 ft depth over the sills.

**• Supervision from the President**—Under the new law, the President—or any agency head he may designate—will direct and supervise the St. Lawrence Seaway Development Corp. In its report on the bill, the House Public Works Committee stated its understanding that "the President will direct the Secretary of the Army to supervise the corporation during the construction period" and that the Corps of Engineers will supervise the construction.

To carry out these steps, Defense Secretary Wilson will first address a letter to Eisenhower recommending that the work be done under direction of the Army and its Corps of Engineers.

An executive order will then establish the administrative control.

That shouldn't take long. More time will be required to form the corporation, issue its bonds, and turn over money to the Army Engineers to get the job started. Possibly some funds might be supplied meanwhile on a temporary or loan basis to permit recruitment of staff and some preparatory work.

### First year's operations St. Lawrence Seaway, U. S. portion International Rapids section

| **Preliminary work** | **Estimated expenditure** |
|---|---|
| Administrative facilities . . . | $204,000 |
| Highway access facilities. . | 290,000 |
| Relocation, highway and railroad . . . . . . . . . . . . | 546,000 |
| Extension and improvement of road . . . . . . . . . . . . | 185,000 |
| Raising power transmission lines . . . . . . . . . . . . . . | 75,000 |
| Initial land acquisition. . . . | 250,000 |
| Engineering and mobilization | 1,200,000 |
| | **$2,750,000** |
| **Initiation construction** | |
| Point Rockaway lock, dikes and canal . . . . . . . . . . . | $770,000 |
| Robinson Bay lock and dikes | 240,000 |
| Grass River lock and dikes. | 690,000 |
| Long Sault Canal and dikes | 990,000 |
| Relocation, N. Y. C. R. R. and highway. . . . . . . . . . | 360,000 |
| | **$3,050,000** |
| **Total funds required, 1st year** | **$5,800,000** |

Eisenhower scored a signal victory in getting the Seaway Bill through Congress.

But the way was already paved for him by smart maneuvering in the preceding Administration. When Congress blocked Truman on overall Seaway development, his Administration got together with Canada to have the power phase approved by the International Joint Commission without the necessity of congressional concurrence.

With that done, a Federal Power Commission license for New York State could not be stopped by the opposition of coal producers, utility interests, railroads and eastern port cities.

### Seaway construction costs

(Estimated at Dec. 1952 price level)

| Section | Canada | U. S. | Total |
|---|---|---|---|
| Welland Canal . . . . . . . . | $2,000,000 | | $2,000,000 |
| Thousand Islands section. | | $1,766,000 | $1,766,000 |
| International Rapids section | | 86,308,000 | 86,308,000 |
| Canadian section . . . . . . . | 172,950,000 | | 172,950,000 |
| **Total** . . . . . . . . . . . | **$174,950,000** | **$88,074,000** | **$263,024,000** |

### U. S. portion, St. Lawrence Seaway

(Annual allocations for accelerated 5-year schedule)

| Fiscal Year | International Rapids section | Thousand Islands section | Total |
|---|---|---|---|
| 1st . . . . . . . . . . . . | $5,800,000 | | $5,800,000 |
| 2nd . . . . . . . . . . . . | 28,700,000 | $690,000 | 29,390,000 |
| 3rd . . . . . . . . . . . . | 35,900,000 | 1,076,000 | 36,976,000 |
| 4th . . . . . . . . . . . . | 15,200,000 | | 15,200,000 |
| 5th . . . . . . . . . . . . | 708,000 | | 708,000 |
| **Total** . . . . . . | **$86,308,000** | **$1,766,000** | **$88,074,000** |

## Seaway stirs plans for allied works

Indicative of the varied construction projects that will be generated by the St. Lawrence Seaway is the revived plan to build a 103-mi conveyor belt from Cleveland to East Liverpool, Ohio.

Twice stymied before in the Ohio legislature, the $210-million project is expected to come up again in January, 1955, in the form of a request for land condemnation rights for its construction.

Backers of the "rubber railroad" point out that iron ore from Labrador could be moved south more cheaply on the belt, while coal for Great Lakes shipment could be transported from southern Ohio.

**• Exports expected to boom**—Exports from Cleveland to foreign markets are predicted to grow from $500 million to $1 billion within 10 years due to the Seaway development, provided, of course, that tariff and selling conditions are favorable.

Astabula, Ohio, is said to be the place to watch. Land suitable for docks is available there, and the Corps of Engineers has proposed a $4.9-million harbor improvement program for the city.

Fairport, near Cleveland, also offers available land adaptable for docks. At Lorain, another northeastern Ohio port, a small amount of land is available near the U. S. Steel Corp.'s National Tube Division.

The other port which is located in this area, Conneaut, is controlled by U. S. Steel.

The Seaway is not expected to have any immediate effects on the proposed 110-mi coal pipeline to be built by Pittsburgh Consolidation Coal Co. from Cadiz, Ohio, to the Cleveland Electric Illuminating Co. plant at Eastlake.

# Upper Colorado

## $1-billion river storage project legislation gets further House action

Legislation authorizing the $1-billion Upper Colorado River project continues to move ahead in the congressional mill, with the House Interior Committee scheduled to vote on the measure this week.

The Administration-drafted bill already has been approved by the House Subcommittee on Irrigation and Reclamation by a 12-to-9 vote (ENR May 6, p. 19). Though an even closer vote is expected in the full committee, chances of the bill being voted out are rated good.

The committee bill would authorize the two big dams at Glen Canyon and Echo Park. In addition, the committee included a third storage reservoir at the Curecanti site on the Gunnison River but specified that no construction could start there until the Interior Secretary found the Curecanti project feasible.

There's a real question on feasibility, partly because the committee limited the size of Curecanti reservoir to 940,000 acre-ft, as compared with the 2,500,000 acre-ft originally proposed. Estimated cost of the smaller project is $50 million. A power plant of undetermined capacity—in the neighborhood of 40,000 kw—would help pay the cost of Curecanti.

Eleven irrigation projects—endorsed by the Administration—are included in the bill. The committee also adopted with slight change, the Administration plan for financing and repayment (ENR March 25, p. 21). But the group turned down the idea of giving the Agriculture Department equal authority with Interior in appraising farming prospects on authorized irrigation projects.

Echo Park in Dinosaur National Monument still faces a stiff fight on the House floor. If the House knocks it out, the Senate probably will restore it, and the issue would then be settled in conference. All that, of course, assumes a Senate vote this year on the bill.

### N. Y. State appointments

Conrad H. Lang, deputy chief engineer of the New York State Thruway Authority, has been named acting chief engineer, succeeding J. Burch McMorran, who resigned to become chief engineer of the New York State Power Authority. McMorran had served as chief engineer of both the New York State Department of Public Works and the Thruway Authority.

### Reaching into South America

**The desperate search for young engineers for state highway work has extended to South America.**

**Following the lead of its neighboring state of Kansas, the Nebraska Highway Department has announced that it is attempting to hire engineering school graduates from Brazil and Chile.**

**According to State Engineer L. N. Ress, 50 professional engineers and 60 engineering assistants are needed for the road building program that lies ahead. He reports that the highway department will get only three June graduates from the University of Nebraska.**

**Six South Americans are now working for the Kansas Highway Department and are doing well, Ress notes. They are classified as engineering trainees and must agree to work for at least a year.**

# Power partnership

## House group authorizes two Northwest dams to be built locally

First step toward implementing the Administration's new policy of encouraging "local participation" in the construction of hydro projects was taken in Congress last week with House Public Works Committee approval of schemes for constructing the $360-million Priest Rapids project on the Columbia River and the $34-million Cougar Dam in Oregon.

Priest Rapids would be built entirely by a Public Utilities District or group of PUD's. But, the Army Engineers would set and enforce specifications and standards.

The Army Engineers would build Cougar Dam on the south fork of the McKenzie River but the city of Eugene, Ore., would finance and control the power features of the project. However, the Army Engineers may, if it is desired, serve as contractors for the power facilities.

House passage of legislation on these projects seems assured and there's a good chance that the Senate will approve them at this session. Cougar is a new project; Priest Rapids, a previously authorized Army Engineer job. Both projects will require a Federal Power Commission license.

Still a third type of federal-local partnership proposition was scheduled to go into the legislative mill this week when Oregon congressmen introduce bills for construction of the John Day project on the Columbia River. This $360-million project would be financed jointly by the federal government and local interests headed by Portland General Electric Co.

# Bidding fight

## S. C. ignores ASCE protest on bids for engineering services

Ignoring a strong protest from the American Society of Civil Engineers, the South Carolina Highway Department was scheduled to open bids earlier this week for engineering services on several road and bridge projects.

The ASCE—now dealing with charges of unethical conduct against engineers who participated in a similar case last fall—had attempted to discourage repetition of the practice by wiring Gov. James S. Byrnes that the highway department is "not serving the public interest in securing professional services through competitive bidding procedures" (ENR May 6, p. 23).

A spokesman for the highway department last week countered that the department intends to spend the taxpayers' money to the best advantage and will follow this practice when advantageous" no matter what the engineers society thinks."

He said the department was asking for bids on the drafting of bridge plans for the second time due to a shortage of engineers and a desire to get competent work done at the least possible cost. It also was claimed that advertised bids brought engineers into the picture who otherwise would have been unknown to the department.

### Offer 'briefing' courses for practicing engineers

The University of Texas has announced establishment of an unusual "Institute for Advanced Engineering" which will offer practicing professional engineers a series of short courses designed to bring them up to date on latest advances in their fields.

The courses will begin with three-week courses to be offered this summer: Advanced experimental stress analysis, new developments in communication theory, and composition and properties of oil-well drilling fluids. First course will begin June 14.

W. R. Woolrich, dean of the College of Engineering, said the course will be conducted at the university's Austin campus, with classes held five days each week during the three-week duration of the course. Fees will be $125 per student per course, and after this summer's work, courses in more varied fields will be offered in succeeding years, Dean Woolrich said.

Men enrolling in the courses must have prescribed prerequisites (in most cases including a B.S. in Engineering).

# Tallest lift-slab speeded by ramp

Four contractors combined operations to complete the tallest lift-slab building in the U. S.–a 58-ft high, five-story addition to Mercy Hospital in Sacramento, Calif. This is as high as any buildings have been erected to date by the lift-slab method. A 6-story nurses' residence was built last year for the General Hospital at Winnipeg, Man., but it was roofed with steel deck (ENR Nov. 12, 1953, p. 25). In both cases, six reinforced concrete slabs were cast on the ground and jacked into place.

The Mercy Hospital addition, 48x292 ft in plan, was divided into four areas for construction purposes, because the lifting equipment is designed to operate from twelve columns at a time. The slabs, therefore, range in size from 3,000 to nearly 5,000 sq ft. Heaviest lift was 300 tons.

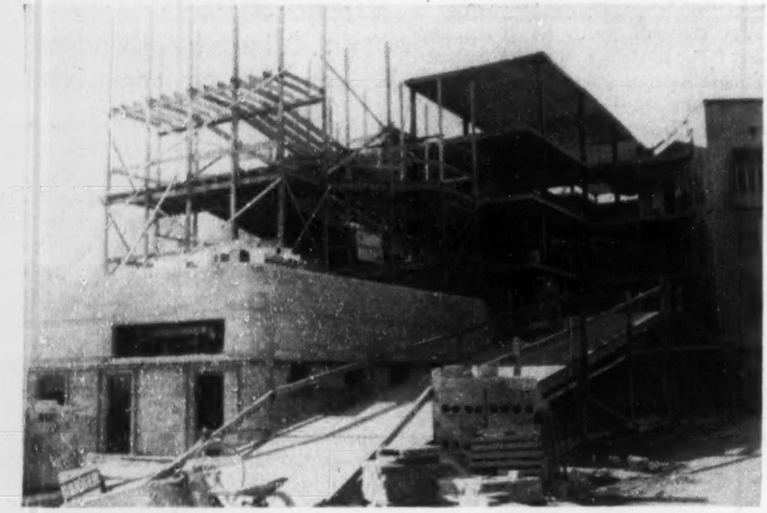
Floor and roof slabs are 9 in. thick. Roof slabs, however, are topped with lightweight concrete to provide a slope for good drainage. Embedded in the slabs around every column are steel lifting collars. Threaded bars from jacks atop the columns are screwed into them to raise the slabs.

Columns are hollow, 10 in. square, fabricated of plate up to ¾ in. thick. Spacing is 24 ft in one direction and from 9½ ft to 25½ ft in the perpendicular direction. Initially, they were erected up to a level 4 ft above the third floor and hydraulically operated jacks were set on top to raise the slabs, which had been cast one on top of another on the ground.

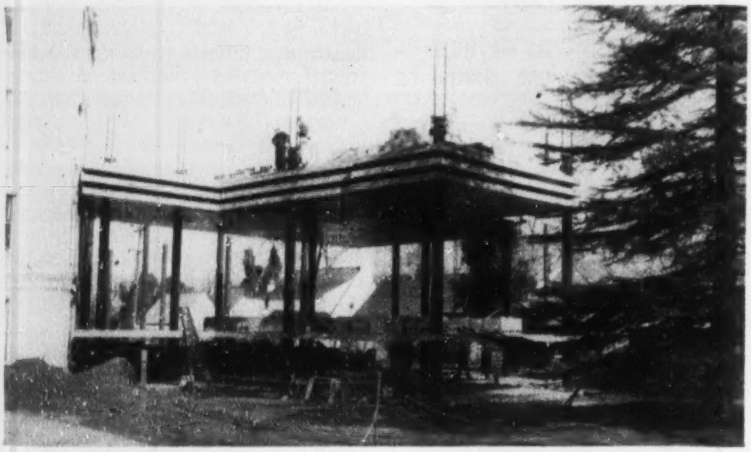
As a first step, roof, fifth, fourth and third-floor slabs were jacked up to third-floor level and held there temporarily, while the first and second floors were raised and anchored permanently, by welding steel plates under the slab to the columns. Then, jacks were removed, columns extended to the roof, jacks replaced on top and the remainder of the slabs lifted to their final positions.

Completion of the building was expedited by ramps extending from floor to floor over which materials could easily be carted. Construction now is one month ahead of schedule.

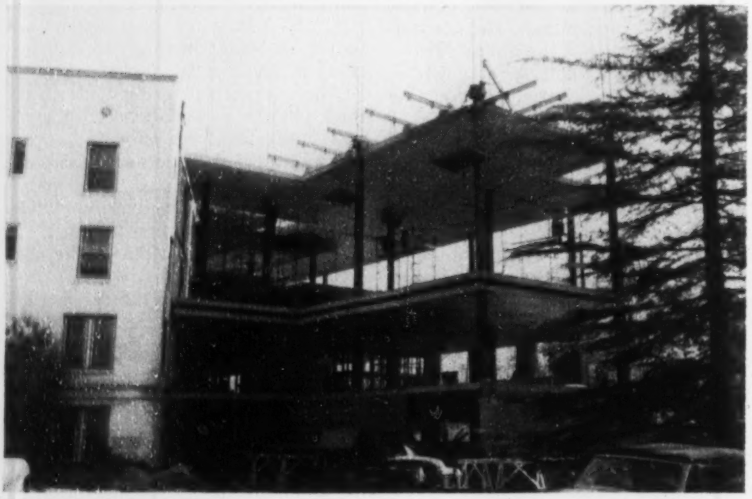
The 100-bed addition cost $2,333,000 to build. Harry J. Devine is the archtect and Ernest Francis, structural engineer. Campbell Construction Co., Heller Construction Co., Erickson Construction Co. and Lawrence Construction Co. are the general contractors. All these firms have headquarters in Sacramento. Vagtborg Lift Slab Corp. of Los Angeles, was subcontractor for the lifting operations.



**WOODEN RAMP** facilitates delivery of building materials to the five floors of a hospital addition under construction in Sacramento, Calif.



**LIFT-SLAB** construction was carried out in two stages. In the first (above) columns were erected to the third floor, the roof and three upper floors were raised to the top and then the bottom two floors were lifted and anchored in place.



**SECOND STAGE** of erection includes extending the columns to the roof and then lifting and anchoring the upper slabs in place.

# Airport aid

## New Administration bill would favor big fields of national importance

Federal aid for airports last week gave signs of coming back to life. The Administration had a bill in both the House and Senate that would favor aid to the bigger and more important fields. Expected any day was a White House request for $33 million of new money to prime the revived program in fiscal 1955.

Federal airport aid has been languishing since fiscal 1953, when Congress allowed it the small sum of $14 million in new funds. The Eisenhower Administration cut aid off completely for the current year and planned no grant request for fiscal 1955, unless the Commerce Department came up with a recommendation for continued federal assistance as a result of studies that were being made.

**• Finds need for aid**—After hearing a report from its airport panel (ENR Dec. 31, 1953, p. 21), the department's Transportation Council called for revival of federal aid, with some changes in program policy. Two of the council's recommendations (ENR March 25, p. 22) were included in last week's bill; a third was added by the Commerce Department.

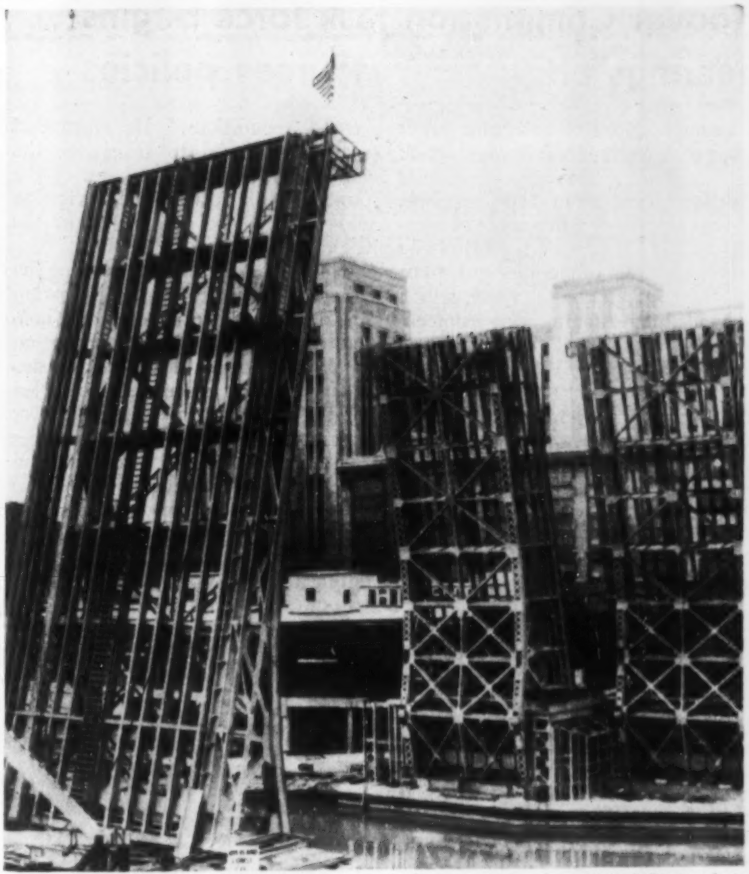
All three of the changes—in the form of amendments to the National Airport Act—would have the effect of making available to large airports a much bigger share of future federal aid.

The proposed legislation would make these revisions in the law:

- Establish national importance instead of local need as the yardstick to be applied in selecting airports for federal aid.
- Eliminate aid for terminal buildings and concentrate federal assistance on strictly airfield features such as runways and lighting.
- Allow the Commerce Department to allocate 50% of the federal funds to airports at its own discretion, wherever it thinks the money will produce the greatest national benefit.

The third change, added to the bill by the department, calls for a 25% increase in the present discretionary fund, with a corresponding reduction in future money to be apportioned among the states on the basis of the population-area formula.

Several powerful senators have spoken out strongly against the third change. Their opposition may at least form a compromise in the legislation.



United Press photo

## Chicago bascule bridge 'topped-out'

**Taking a leaf from the tradition of skyscraper construction, Chicago public works officials "topped-out" their new $5-million, twin-bascule bridge (ENR May 4, 1950, p. 54). The completed structure will carry both four-lane roadways of the Congress Street Expressway over the south branch of the Chicago River.**

**Initial lowering of the leaves will take place some time this summer, and completion of the bridge is scheduled for next February. Roadway and sidewalk slabs still have to be added, counterweights completed, heavy operating machinery erected and adjusted, and the eight main bridge motors installed together with their electrical control equipment.**

**The bridge foundations were completed in 1952 by M. J. Boyle & Co. The Overland Construction Co. erected the structural steel in the four bascule leaves in five months.**

## Consultants to check slide threatening Panama Canal

A four-man team of consultants was to have left late this week to inspect the threatening crack in Contractor's Hill in the Gaillard Cut section of the Panama Canal (ENR May 6, p 23).

The four consultants, named by Maj. Gen. John S. Seybold, Governor of the Canal Zone, are: Dr. C. W. Livingston, a mining engineer at Edgemont, S. D., and formerly of the Colorado School of Mines; Arthur Casagrande, Harvard University geologist; Hibbert M. Hill, Minneapolis, president of the Northern States Power Co.; and E. E. Abbott, chief of engineering, Ohio River Division, Army Engineers.

## Causeway is authorized for Mississippi Gulf Coast

A proposed $36-million causeway system linking Horn and Ship islands with Mississippi's Gulf Coast has been approved by the state legislature. The purpose of the project is to create island resorts.

Ship Island would be connected to the mainland at a point between Gulfport and Biloxi by a 10-mi causeway. A causeway bridge would link the two islands. A causeway of about seven miles would connect Horn Island with the coast near Pascagoula.

Bond financing would be shared equally by three coast counties, provided voters approve a $12-million issue in each county.

## Hoover Commission task force begins hearings on water resources policies

Federal control of water and power projects came under vigorous attack last week at a Hoover Commission task force hearing in San Francisco.

This was the first in a series of hearings to be held in various parts of the country by the 14-member task force on water resources and power, which is headed by Admiral Ben Moreell, president of Jones & Laughlin Steel Co. (ENR Oct. 22, 1953, p. 21).

The mission of the task force is to investigate improvements of rivers, harbors and waterways for navigation; development of flood protection works; improvements for drainage, irrigation, land reclamation, water supply, pollution abatement and recreation; and the generation, transmission and distribution of electric energy.

• **Revenue bonds suggested**—A plea for accurate accounting methods and full disclosure of hidden subsidies in federal multi-purpose water and power projects was made by Samuel B. Morris, general manager and chief engineer of the Department of Water and Power of Los Angeles. He said costs should be properly allocated so that one function of a project is not called on to subsidize another.

To put federal projects on a sound basis, Morris further recommended—

1. Appointment of an impartial review board to analyze proposed projects and present reports to Congress.
2. A maximum 50-year repayment period on all projects.
3. Financing new federal projects by revenue bonds. He suggested that such a federal agency as Bonneville Power Administration could meet its capital construction requirements by issuance of such bonds, to spare the taxpayer and for an added check on the efficiency of the authority.

"The regular issuance of a utility bond prospectus scanned by the many bond houses would have a very salutary effect upon the federal program," he declared.

• **Other major recommendations**—Pacific Gas & Electric Co offered to buy the power transmission facilities and power plants of the Central Valley Project for cash, and to establish a working partnership with the federal government.

William M. Harrison, chairman of the committee for California Ownership of the Central Valley Project, charged that government operation of CVP imposes federal domination on affairs of the state with resulting "chaotic conditions." He urged that users be allowed to take over the agricultural and power phases of the project, while leaving the navigation and flood control phases up to the federal government.

Charles F. Lambert, representing the Upper Sacramento Valley Irrigation District committee, urged strengthening of public power administration through creation of a Cabinet department of water resources. He called for the new department to take over management of all water resources from existing federal agencies, and called for a "nationwide cooperative program of water resource development." At the same time, he took a view opposite from most expressed during the hearings by stating: "Public power is a must. Government and private power should compete to assure agriculture of low-cost power."

## Jobs in the news

**POLYETHYLENE PLANT—Koppers Co., Pittsburgh, Pa., will build a $75-million polyethylene plastics plant at Port Arthur, Tex. Foundation work for the plant will be extensive and heavy since the weighty processing equipment it supports will involve steel tanks with 8 and 9-in.-thick walls to withstand pressures around 30,000 psi.**

**DRAINAGE TUNNEL—An $11.8-million joint contract for the construction of a 7.5-mi sewage drainage tunnel in Boston, Mass., has been awarded to Morrison-Knudsen Co., Inc.; C. J. Maney Co., Inc. and Peter Kiewit Sons Co., New York. Running from Ward St., Boston, to the new sewage plant on Deer Island, the drainage will involve 2.5 mi of 10-ft dia and 5 mi of 11.5-ft dia reinforced concrete tunnel.**

**NEW LOCK—To replace the oldest lock on the Mississippi River below St. Paul, Minn., construction of a new $8-million Lock 19 at Keokuk, Ia., has been awarded to the J. A. Jones Construction Co., Charlotte, N. C., by the Corps of Engineers, Rock Island, Ill. Site of Lock 19 is at the oldest dam and the only important power station on the Mississippi below St. Paul.**

**VILLAGE—An integrated $40-million section of a town, consisting of residences, markets and schools, will be built by the Branden Construction Co., Oakland, Calif., at Palma Ceia Village, Mount Eden Township, near Hayward, Calif., for A. L. Brandon and E. W. McGah, Haward.**

## Air pollution requires big research effort

"To attack objectionable air pollution successfully we must know a great deal more about it," declared William L. Stewart Jr., executive vice-president of the Union Oil Co. of California, at the Air Pollution Control Assn.'s 47th annual meeting in Chattanooga, Tenn., last week.

Stewart contended that "intensive research is the only means of laying the groundwork for a truly successful program." And, he cautioned his 400 listeners that local governments do not have the facilities, the scientists, or the funds to conduct the war on pollution in the air.

There appear to be four methods of attacking the problem, Stewart pointed out. He listed these as: (1) Decreasing the amounts of contaminants; (2) diluting the contaminants; (3) removing them from the air; and (4) developing techniques for rendering them harmless.

Stewart recalled that water often is made safe to drink, not by removing impurities, but by adding chemicals which render the impurities harmless. "The day may come soon," he said, "when we attack the problem by releasing more chemicals into the atmosphere, thereby neutralizing the harmful contaminants."

Gordon P. Larson, director of the Los Angeles Air Pollution Control District, was installed as president of the association, succeeding Thomas C. Wurtz of Pittsburgh, director of air pollution control for Allegheny County, Pa.

## Toll road legislation vetoed in Mississippi

Mississippi's Gov. Hugh L. White has vetoed legislation that would have empowered the state highway commission to construct and operate a $100-million cross-state toll road.

He based his veto on a provision of the bill that gave bondholders a right to sue the state.

The measure had passed both branches of the legislature with very little opposition (ENR April 29, p. 25) and the governor's approval had been more or less taken for granted.

But, in addition to his objection to the state liability provision, the governor also said he was opposed to the handling of turnpike bonds by the state highway commission and suggested that a turnpike commission be created for the purpose.

The governor declared he would allow the measure to be resubmitted at an anticipated special session, provided objectionable features of the bill are eliminated.

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## LABOR

# Boiling point

### Unionization of civils gets second look in Ohio, first long look in West

A young civil engineer in Ohio has become the symbol of engineer resistance to organization by labor unions.

Last week L. Stuart McCoy, whose flat refusal to join the International Union of Operating Engineers had made him something of a storm center (ENR March 18, p. 23), filed charges of unfair labor practices with National Labor Relations Board against a local of the operating engineers and against his employer.

Backing McCoy in his fight is the Ohio Society of Professional Engineers, which says it's "unalterably opposed" to any effort to force engineers to join unions. Such efforts were made in his case, charged McCoy, by Frank Converse, president of an operating engineers' local which includes most of Ohio.

McCoy's attorney also is special counsel to the Ohio professional group. In his charges, McCoy asserted that his refusal to join the operating engineers' local—which has been making a strong drive among contractors' survey parties in Ohio as elsewhere—resulted in demotion by his employer and left him "vocationally insecure."

Through McCoy's charges runs an expression of his philosophy—and that of many civil engineers—about unionism. At one point, he states that he "would not wish to be associated with a union containing rank-and-file members," and further that he "does not desire to join any union."

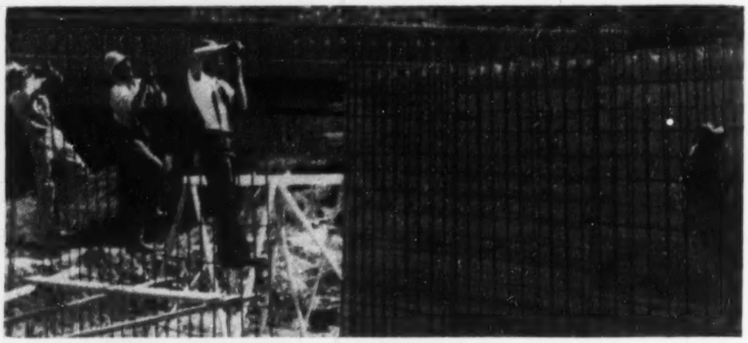
While McCoy's case was coming to a boil, ENGINEERING NEWS-RECORD poked into the not-by-any-means-new issue of unionization of engineers in another part of the country: California.

**• Union's early start**—At the close of World War II, Local 89 of the Technical Engineers, Architects and Draftsmen Union (AFL) started its drive to organize survey parties in the San Francisco Bay area. Its treasury was small. It couldn't afford a business agent. And its 250 membership was all that remained from the days when mushrooming shipyards had boosted the ranks to 3,000.

Almost a decade later—and under the sponsorship of the Operating Engineers—the technical engineers are well on the way to organizing contractors' survey parties in all of Northern California. Membership has jumped to about 800. (This includes only about 30 civil engineers, some of them working as project managers, superintendents and foremen and most of them veterans of the original technical engineers group.)

As spring contract-signing season rolls around, the union is not expected to try to extend its gains. But it won a wage increase from the Associated General Contractors, conforming to the pattern set in other crafts contracts (the contract was open for negotiations only on wages). And it has a chance to show its strength in two other fronts:

- Its contract with the Bay Counties Civil Engineers and Land Surveyors Assn. will be re-opened in June. The main pitch for field party workers apparently will be to bring head and rear chainman's rates up from $2.20 and $2.10 an hour to the AGC level of $2.52 and $2.38. Rates are slightly lower than the AGC contract, but fringe benefits compensate.
- A new contract with the Santa



**REINFORCED** by court order, all-purpose workers are unmolested as . . .

# AFL crafts raid fails in Kentucky

**When John Saltsman of Bardstown, Ky., began work on his drainage contract at the Kentucky end of a new bridge across the Ohio River at Shawneetown, Ky., he brought in a nucleus of workers who had been with him for several years—members of the United Construction Workers union, a subgroup of the United Mine Workers (ENR Mar. 11, p. 28).**

**To this group he added others, also members of UCW. Representatives of AFL trades—carpenters, operating engineers, laborers and teamsters—asked him to use their men. Trouble was, Saltsman told them, he had been under contract with UCW for seven years, and was happy with the industrial-type union which allowed him to shift workers from job to job without jurisdictional strife.**

**A raiding party of more than 200 AFL workers appeared, so Saltsman shut down the job until a local court isued an order restraining the AFL unions from interfering. When Saltsman offered to pay the initiation fees and dues of his work force in the AFL trades, he told ENR, his offer was declined. It was jobs the insurgent unions wanted, not money, he was told.**

**The work is going ahead now under the court order and the eyes of the local sheriff.**

*ENR staff photos*

**HE KEPT UCW workers on job and avoided trouble—John Saltsman, glasses.**

Clara County Assn. of Civil Engineers and Land Surveyors is imminent.

Why the apparent success in unionizing the survey parties? One reason may be that San Francisco is a strong union area. But building contractor Harold Sjoberg, former president of the Central California Chapter of AGC and long-time member of its negotiating committee, blames contractor indifference.

"It's a matter of expediency," says Sjoberg. "These inroads into management prerogatives don't cost contractors anything directly—or immediately—so they're indifferent. They lost the battle against union pressures just because they got tired."

He fears that unionization of survey parties is only a "foot in the door" for the Operating Engineers, that the union will pressure next for organization of timekeepers, estimators, draftsmen, office workers. "Without militant opposition by employers," says Sjoberg, "we're bound to experience progressive deterioration of our position."

• **First break**—Actually, the contractors' groups didn't sign with the union until two years after surveyors' associations had recognized union representation for their survey party employes.

The first success the original technical engineers group had after the close of the war was in negotiating contracts with two land surveyors. This spurred other surveyors into establishing the Bay Counties Civil Engineers and Land Surveyors Assn. It included most of the surveyors in the area and was able to check further union efforts.

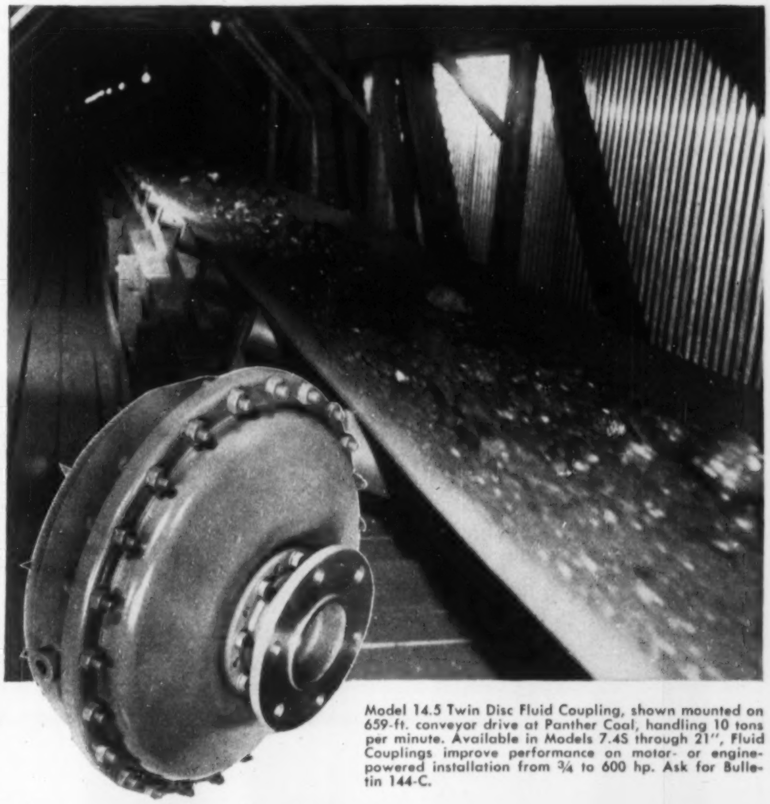
The technique of the union was to picket subdivisions laid out by nonunion surveyors. But the strikes were unsuccessful because the union did not have the support of the jurisdiction-jealous craft unions.

So in 1948 the technical engineers successfully petitioned Local 3 of the Operating Engineers to take them in.

This move gave the technical engineers new strength. Not only did it have the backing of the well-established and financially strong Operating Engineers, but also of crafts unions.

Operating Engineers put picket lines on survey operations on a few subdivision jobs. Members of other construction unions respected the lines and work was stopped.

In April 1949, members of the Peninsula Chapter, Bay Counties Civil Engineers and Land Surveyors Assn.,



Model 14.5 Twin Disc Fluid Coupling, shown mounted on 659-ft. conveyor drive at Panther Coal, handling 10 tons per minute. Available in Models 7.4S through 21", Fluid Couplings improve performance on motor- or engine-powered installation from ¾ to 600 hp. Ask for Bulletin 144-C.

**Corrective maintenance program cuts costs at Panther Coal**

At its Roseann Mine near Roseann, Va., Panther Coal Co., Inc. was able to *prevent potential maintenance*—and reduce belt costs—on a 659-ft. conveyor, by installing a special driving unit . . . incorporating a Twin Disc Model 14.5 Fluid Coupling with a 100 hp, 1770 rpm, 220-volt motor and a 15:1 Cone-Drive reducer with special roller chain and sprocket arrangement, designed by Mr. Joe Wantling, Maintenance Superintendent, and built in the owner's shops. Eliminating the drag and jerk of mechanical drive, the Fluid Coupling provides smooth starts, preventing motor burn-outs and reducing peak tension . . . and permitting use of a 5-ply 36-oz. rubber belt.

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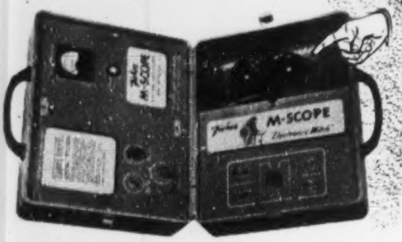

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### . . . Engineer unionization

announced they would have to pull out of the organization and sign an agreement with the union.

At this point the association decided that further resistance was futile. Rather than let the peninsula chapter pull out, the entire association agreed to negotiate with the union.

Out of talks came this agreement: Chief of party or senior inspector would get $2.50 an hour; instrumentmen or inspector, $2.25; junior inspector, engineer's or inspector's aid, $1.75.

Union spokesmen—reviewing this agreement—say that they had some surveyor support. Large employers, who paid higher wages were just as happy to have the wage levels of their smaller competitors brought up to their standards. But any move of this nature on an association level was impossible since larger firms would be outvoted by the smaller firms.

• **First moves**—First formal talks between operating engineers and AGC over the survey party issue came in 1951. AGC flatly refused to consider such representation, and when the operating engineers started scattered strikes, it ordered a Northern California shutdown. A one-day shutdown that year ended the discussions.

Capitulation to OE came in 1951, at the end of a carpenters' strike that had lasted two months. The OE threatened to extend that strike, and AGC, worn down by the long battle with the carpenters, signed.

Today the Operating Engineers are placing emphasis on a college program. Its chief attraction: summer jobs to undergraduates at up to $2.52 an hour as chairmen. About 100 students took advantage of this last summer.

The program hasn't been in effect long enough to demonstrate whether any appreciable number of graduate engineers will remain with the union. But business agent Al Boardman—president of the technical engineers unit before it joined the Operating Engineers, and now heading the survey party organization—is optimistic about the chances of bringing more civil engineers into the union.

Developments in unionizing civil and other professional engineering employes in Southern California seem to be following the pattern set in the San Francisco area.

Operating Engineers Local 12 (Southern California and Southern Nevada) and AGC currently are negotiating a new contract.

Local 12 has a contract including

these workers with the surveyors association—and reportedly has contracts with almost all surveyors who are not association members.

### Senate kills changes in Taft-Hartley Law

The Senate has voted to send President Eisenhower's Taft-Hartley revision bill back to the Labor Committee—in effect killing it for this year.

Southern and northern Democrats, disregarding an appeal by Republican leaders, voted together, but for entirely different reasons, to recommit the bill.

Northern Democrats said the measure, approved on straight party lines by the Labor Committee, failed to go to the heart of what they called antilabor "inequities" in the present law.

The southerners were also worried about an anti-discrimination amendment which Sen. Lehman said he would call up. The agreement to limit debate on all amendments to 90 minutes would have blocked any southern effort to filibuster that amendment.

### Labor briefs . . .

• **One claim lost**—In Frankfort, Ky., the Court of Appeals has ruled that work performed in the production of materials for construction of a public project is not work on the project itself. The decision came as a result of a worker's claim for the difference between wages set by law for work performed on certain public projects and the lower amount actually paid him. The worker was employed as a laborer and bulldozer operator for an asphalt-mix plant. The firm—awarded contracts for resurfacing highways—used about two-thirds of its products for this work. A lower court ordered the company to pay the worker $937 more.

• **One claim won**—The U.S. Court of Claims has ordered the federal government to pay a World War II contractor $20,000—the difference between his contract minimum wage rates (75 cents) and the higher prevailing rates ($1.00) that he actually paid. The contractor had investigated the labor situation before submitting his bid. The Secretary of Labor prescribed 85 cents an hour for unskilled labor on the project involved—and the U.S. Employment Service decided that an abundant supply of unskilled labor would be available at that rate. But the going rate of pay turned out to be $1.00 an hour and the contractor had to pay more than $19,000 extra in wages than estimated in the bid.

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# Power line leaps James River

## A half million dollars was saved on this electric power crossing, thanks to the presence of the James River Bridge

**H. W. Furlong**
Stone & Webster Engineering Corp.
Boston, Mass.

Around Virginia's Hampton Roads the long and difficult water crossing has become commonplace in recent years. First there was James River Bridge, in the late '30's; then, since World War II, have come York River Bridge and the bridge and tunnel connecting Norfolk with Portsmouth. Still in prospect is a bridge-tunnel across Hampton Roads itself.

These crossings have enjoyed wide public attention, probably because they are for vehicular traffic. Another kind of traffic, electric power, now is crossing a broad reach of tidewater near Hampton Roads—at 4½-mi James River Bridge.

Built with little fanfare, the new transmission line nevertheless embodies some novel design and construction features. Vital use was made of the existing bridge, but for the most part the new line is on its own location parallel to the bridge.

The crossing is part of a Virginia Electric and Power Co. high tension line between Suffolk, Va. and Newport News. Its main purpose is to serve aviation test facilities at nearby Langley Field. At present it carries one 110,000-volt circuit and two ground wires. Over-all project cost is $1.5 million.

**• Big saving**—The cost would have been $500,000 more if the bridge had not been available. This is the amount saved by attaching four transmission towers to the bridge's main-channel crossing. In this zone the bridge consists of a 300-ft through-truss lift span, having four 210-ft through-truss approach spans on each side.

Towers for an independent main-channel crossing would have had to be 300 ft high—about 80 ft higher than the highest ones needed outside the main-channel zone. They also would have required expensive foundations and fendering against big-ship impacts.

There was less economy in supporting the remainder of the transmission line on the bridge because it is a deck structure landward in both directions from the lift-bridge approach trusses. Any saving in structural cost would be more than offset by potential liabilities in case of failure, and the power company could retain a higher degree of control where the line ran on independent location.

Two other methods of crossing had been considered: a pipe-enclosed submarine cable, and pipe-enclosed cables attached to the highway bridge. Both were ruled out by high installation cost, less reliability and more difficult maintenance.

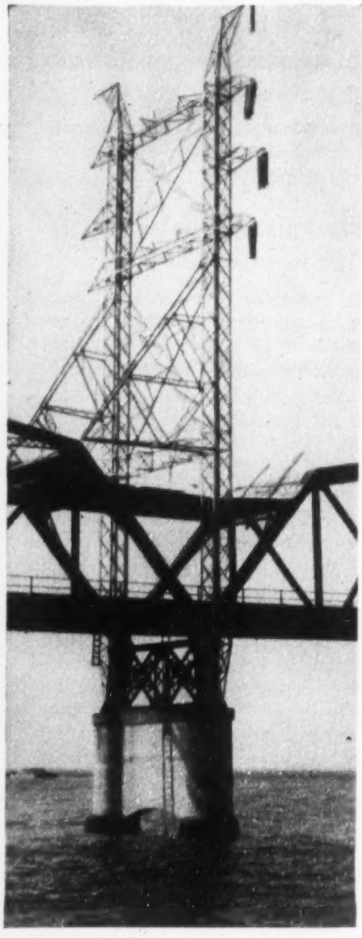
**• Tower protection**—The project's engineering interest centers on a tripod tower design and on techniques for protecting open water towers from shipping. Despite the fact that use of the highway bridge eliminated the need for building fendering to take big-ship impacts, four towers are protected by fendering designed to absorb without damage the kinetic energy of a 1,000-ton ship traveling at 3 knots. These towers are in water 25 to 36 ft deep.

Less expensive protection is afforded in shallower water. In fact, for the first 2 mi of the 4½-mi crossing the structures themselves will take anticipated impacts. Here, at the southwest side of James River, navigation is limited by water depths of 2 to 8 ft. The line is supported by braced H-frame timber-pole structures, spaced 600 ft apart, on wood-pile foundations. Minimum wire clearance over water is 65 ft.

Continuing northeastward, there is about 9,000 ft of the 25-35-ft-deep water, then the depth becomes 10-15 ft for the remaining 4,000 ft to the river's left bank. In this 13,000 ft there are seven river towers and the four bridge towers to support the line. River towers have a maximum height of 222 ft above mhw; they are as much as 1,870 ft apart and they keep their conductors at least 100 ft above the water.

Where connections are made to towers on the bridge the conductors swing laterally about 50 ft on spans of 1000 ft. The outer bridge towers are located at the piers between the outermost approach trusses and their adjacent trusses. Wires then run 630 ft across three trusses to the inner transmission towers atop the lift-span towers. The lightweight transmission towers add 43 ft to the overall height at the lift bridge, making it 229 ft. Bridge channel clearance is 148 ft, and the lowest transmission wires are 34 ft higher, being strung outside the lift-truss top chords.

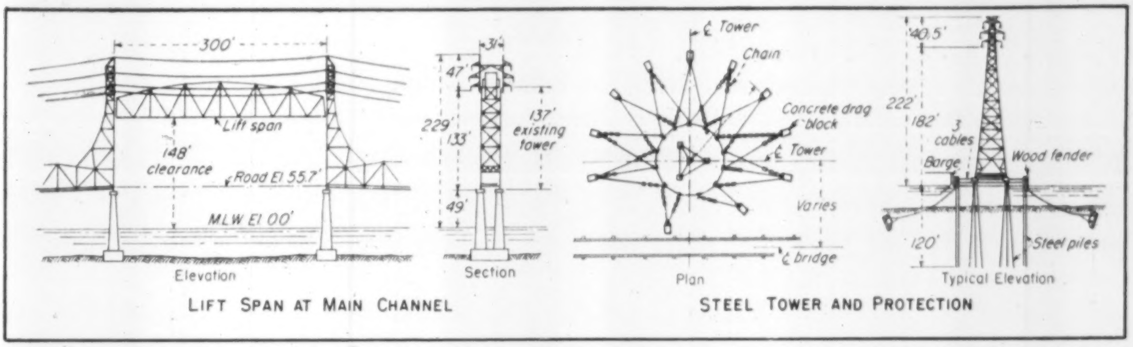
Conductors on the bridge towers are strung to give a miximum pull of 5,000 lb at medium loading of ¼-in. radial ice plus 8-lb. wind. This pull is 2,000 lb less than that for the river towers in order to limit the additional loads imposed on the bridge trusses. Design factor of safety in all towers is 1.5, assuming two cables broken.



**BRIDGE BOOSTS** transmission line at main-channel crossing, where independent towers would have cost another $500,000.

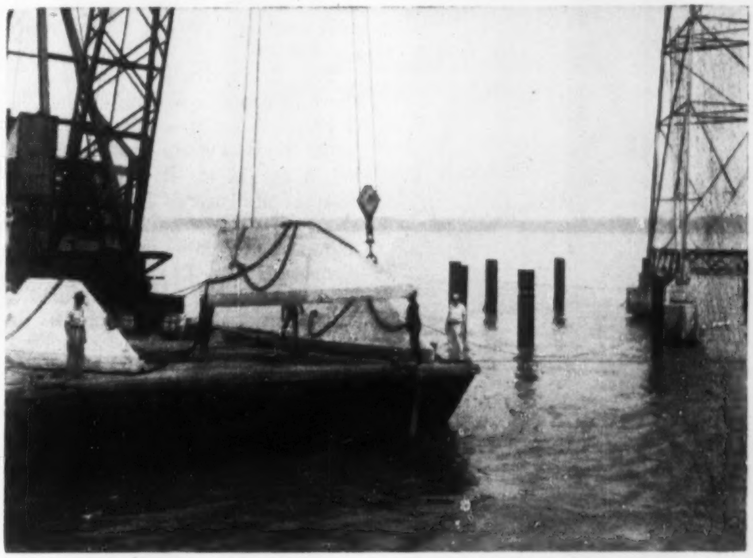
**• Tripod towers**—All steel river towers were designed with three sides instead of the customary four. Each of the three tower legs consists of two angles, with one of the angles located in the plane of each of the adjacent tower faces. This arrangement permitted simple low-cost on-land assembly of the tower faces. At the site a long-boom crane hoisted the assemblies from a barge directly into place on their bases. The bases include a tripod strut frame resting on the foundation structure.

Three-sided towers are stiffer and more rugged than the usual four-sided tower, and they need be no more complicated. The design is believed to be particularly appropriate for the difficult deep water conditions en-



**CONSTRUCTION FEATURES**—At James River Bridge lift span (left), tower extensions 43 ft high provide clearance for electric wires. Fendering around major towers in river (right) will absorb impact of 1,000-ton vessel traveling at 3 knots.

**TRIPOD PILE** foundation for a tower leg gets tremie concrete encasement protection in zone of tide's rise and fall.



**DRAG BLOCK** begins its descent to river bottom. Chain attaches block to fender pile (right). Shape of block is supposed to make it easy to drag, absorbing kinetic energy when fender pile is hit. Submerged weight of block is 20 tons.

countered on this crossing. Should settlement occur under any one tower leg, the tripod construction will permit the tower as a whole to tilt in one plane without introducing serious secondary stresses such as those which might occur in four-sided towers. The tower can be brought back to plumb by jacking nuts on foundation bolts.

Foundations for the towers consist of three steel H piles arranged in tripod formation under each of the three legs. Pile lengths range up to 150 ft, being 14-in. H's at 73 lb for the greater depths. The design loading is 40 tons per pile.

- **Pile protection**—The piles are capped with a concrete mat constructed above low-water level. Steel cylinders filled with reinforced concrete and treated with bitumastic paint were placed around the top of each steel pile for a depth of 8 ft 6 in., to serve as protection against corrosion in salt water.

Protection against shipping was the remaining major concern at the James River crossing. Fendering at each of four towers located in deep water consists of a ring of vertical steel piles driven around the tower foundation. The piles are connected with three circumferential lines of stainless steel stranded cables, each cable having a rated strength of more than 50,000 lb and arranged vertically to restrain various sizes of craft.

Heavy wrought iron chains having a rated strength of about 60,000 lb are attached radially to the steel piles and fastened to concrete drag blocks sunk with their tops 4 ft below the river bed. Each block has a submerged weight of about 20 tons.

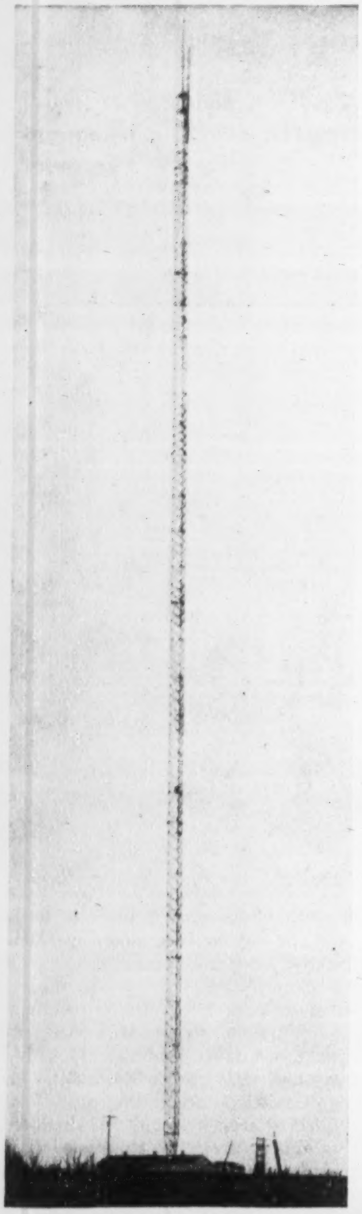
- **Block placement**—The drag blocks were dropped by gravity and nosed into the river bed with all chains and fastenings attached. Careful horizontal and vertical measurements determined the length to which the drag chain was to be cut, in order to permit the steel piles to deflect 5 to 6 ft before fully engaging the drag blocks. The blocks were constructed so as to offer a minimum resistance to horizontal movement, giving reasonable assurance that the blocks will yield and thus absorb the kinetic energy carried by a colliding ship.

Steel towers located in shallower water are protected by clusters of wood piles encircling the steel towers and connected circumferentially with two lines of stranded stainless steel cables, each cable having a rated strength of about 30,000 lb. These towers are located much farther from the river channel and the protection afforded is correspondingly lower in kinetic energy value than is provided for the four main towers.

The entire crossing was developed and designed by Stone & Webster Engineering Corp. under supervision of Virginia Electric and Power Co.

The steel towers were detailed and fabricated by Bethlehem Steel Co., and erected by Stone & Webster.

Foundations were constructed by Tidewater Construction Corp. of Norfolk under the supervision of Stone & Webster.



# Tall TV tower

## Nearly 1,000-ft high, tower construction was hampered by weather

As the field of television reception is broadened more and taller towers are needed, presenting new challenges to both designer and erector.

A newcomer among the taller television towers is the 100-000-w station WTTV, Bloomington, Ind., which was placed in operation this spring. Although not the tallest on record, its three-sided steel frame tower, together with antenna, lacks just 28 ft of reaching 1,000 ft.

The tower, itself, stands 890 ft above its concrete base, while the 100-ft 10,000-lb antenna extends an additional 82 ft skyward—making a total height of 972 ft. It is located on a 38-acre site near Cloverdale, Ind., about 25 miles northwest of Bloomington, and 40 miles southwest of Indianapolis.

In locating the tower a site had to be chosen that would minimize the hazards to private and commercial planes. The spot selected is inside a triangle of air lanes connecting Indianapolis, Terre Haute and Evansville. As a warning to aircraft—although air traffic is extremely light in that area—the tower is equipped with three flashing beacon lights and 12 obstacle lights.

• **140-mph wind design**—The giant triangle-shaped, non-insulated tower, containing 186 tons of structural steel, tapers down to a ball-and-socket base, resting on a concrete pedestal 8 ft square at the top, 20 ft square at the bottom and 15 ft deep. It was designed for a 140-mph wind, while the antenna was designed for a 100-mph wind.

There are three sets of guys, the longest of which are 1,100-ft and extend out 600 ft from the base. Guys are 1¾-in. in diameter. The three legs of the tower are tubular steel, with angle bracing.

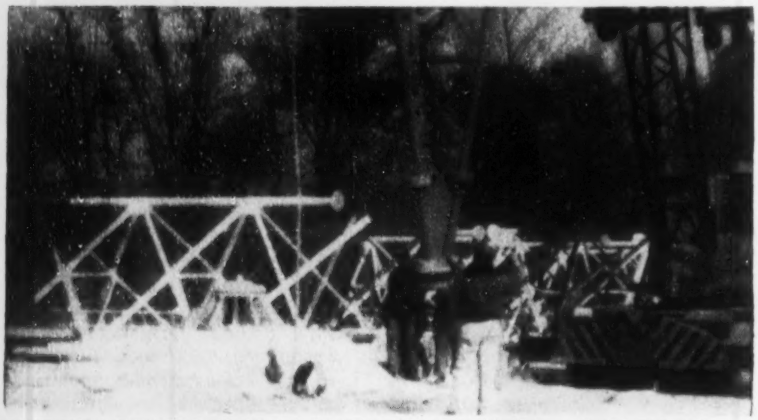
The tower sections, measuring 10 ft on each side, were fabricated in 30-ft lengths, weighing up to 6 tons. Flange plates on the top and bottom of each leg of the tower permitted each section to be seated on the previously erected section and field bolted as erection continued.

• **Slow erection**—Probably no other type of steel erection is so much at the mercy of wind and weather as is that of erecting tall television towers. In the case of the WTTV tower, erection was started Nov. 15 and would have been completed in six to eight weeks of good weather.

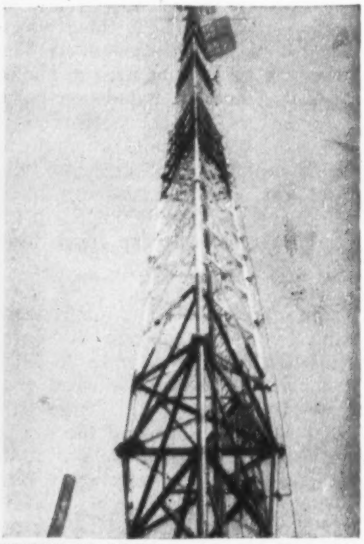
But it wasn't completed and the antenna mounted until Feb. 4. Much of the delay was caused by ice, mist or fog forming part way up the tower. As the tower grew in height, the wind also proved to be a serious obstacle. During the later stages of erection only about one day in four was usitable for working.

The 5-ton antenna was completely assembled on the ground and erected in one picee.

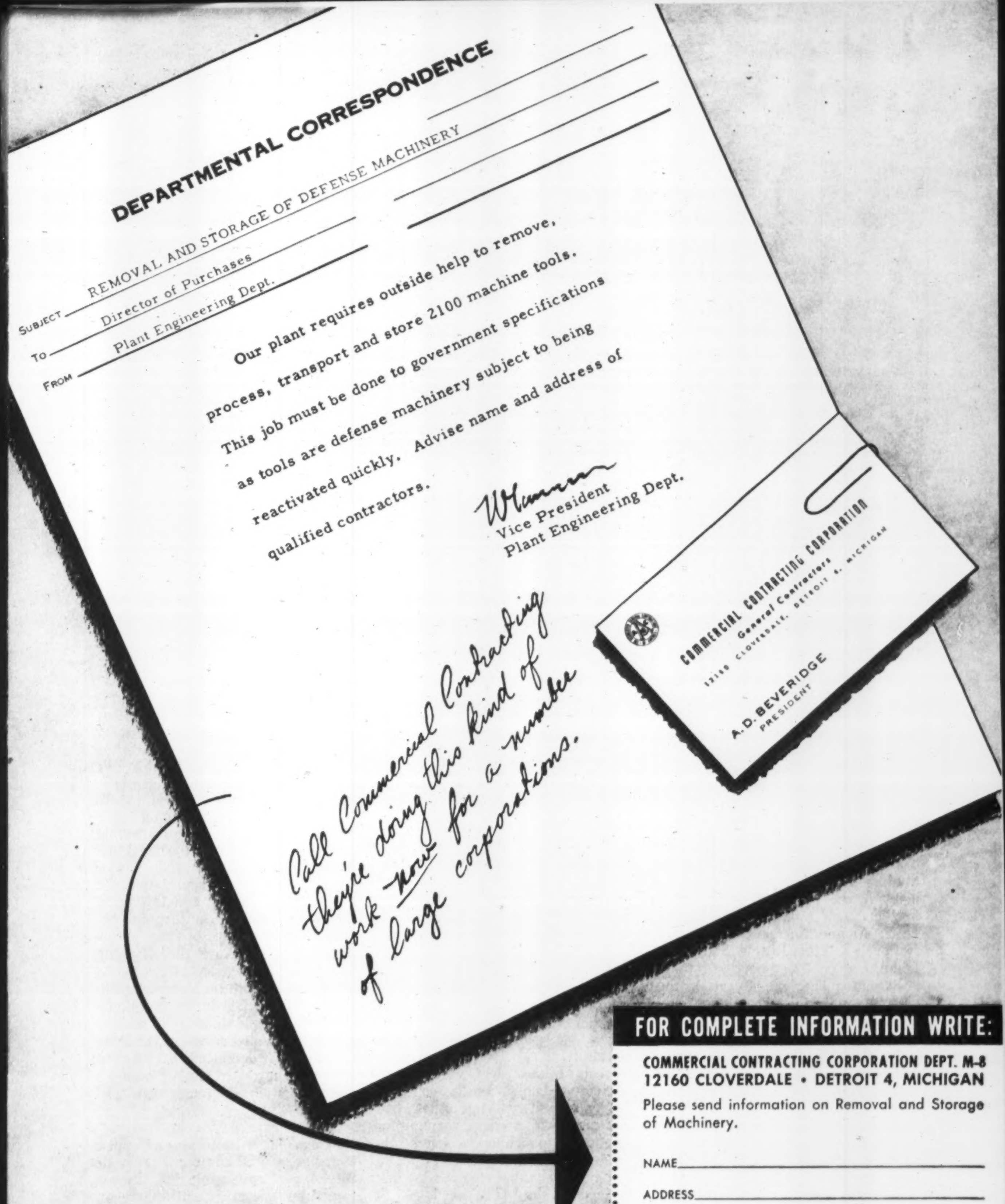
• **Designers and builders**—Radio Corporation of America handled the entire project for WTTV. Estimated cost is $400,000 including the site and transmitter which is housed in a 68x16-ft prefabricated building at the base of the tower. The Blaw-Knox Co., Pittsburgh, prepared the designs and fabricated the tower. Electrical Tower Service, Inc., Peoria, Ill., erected the 890-ft tower, mounted the 100-ft antenna, and installed the two 3⅛-in. dia transmission lines, lighting and other accessory items on the tower.



**BASE OF 1,000-FT TOWER** is hoisted to rest on steel ball in socketed pedestal.



**TUBULAR LEGS** are braced with angles.



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TIGHT PLACES—In parts of reactor shield, pipes are so close that aggregates were placed best by hand. Grout-intruded concrete made hand placement possible.

### For atomic shield . . .

# Barytes: Handle with care!

**There's nothing sinister about this warning. It's just that this aggregate—used in heavy concrete—can suffer high losses during processing**

**Lewis Narrow**
**Project Engineer**
**Idaho Operations Office**
**U. S. Atomic Energy Commission**
**Idaho Falls, Idaho**

Heavy concrete is an efficient material for shielding people from radiation, but aggregate control and placement of the concrete can be troublesome. A case illustrating this point is the biological shield for a new materials testing reactor at the U. S. Atomic Energy Commission's National Reactor Testing Station in Idaho.

Barium sulfate ore (barytes), the aggregate for this heavy concrete, crumbles easily. Processing the barytes satisfactorily was one major problem.

Another difficulty arose because the concrete shield must contain many cooling water and service pipes and ducts, as well as numerous experimental ports. This concreting problem was overcome by pre-placing the aggregates and grouting the voids, a technique that has been applied in a variety of tough construction situations since World War II.

The purpose of the Idaho materials testing reactor (MTR) is to provide an intense neutron flux in which to test various materials being considered for use in future reactors.

Basic design work was done by a joint committee representing the Argonne and the Oak Ridge national laboratories. Blaw-Knox Const. Co., Pittsburgh, Pa., was the architect-engineer, and the Fluor Corp., Los Angeles, Calif., held the major construction contract. Grout-intruded concrete work was performed by the Prepakt Concrete Co. of Cleveland, Ohio. Morrison-Knudsen Co., Boise, Idaho, processed the barytes. Design and construction were administered by the Idaho Operations Office of the AEC.

**• Steel aggregate specified**—Previous biological shields had been constructed of lead, steel, conventional concrete and high-density concrete. The high-density concrete usually had been made with a coarse aggregate of iron or steel punchings, which is subject to separation and segregation in handling. This aggregate was first specified for the MTR shielding.

However, Oak Ridge National Laboratory had tested a high density concrete made with natural heavy ores, and recommended barytes concrete for the MTR shield. Barytes would permit construction of a shield only two-thirds as thick as one made of ordinary stone concrete, insofar as ability to stop gamma rays was concerned.

**• USBR helps**—Tests were conducted by the Bureau of Reclamation to determine means of obtaining a workable concrete of maximum density, and to test the behavior of the concrete.

These tests led to a workable mix that would produce concrete with a minimum density of 218 lb per cu ft by wet placement and 224 lb per cu ft by the void-grouting method. Aside from high losses during processing of the aggregate the concrete's only drawback was poor resistance to weather. However, the shield was to be indoors, so weathering was no problem.

The MTR shield, as redesigned to use the natural heavy aggregates, is a hollow 32-ft cube, with walls 9 ft thick. The upper two-thirds of the structure contains the pipes, ducts and experimental ports. There are about 100 of the ports, or access holes, varying from 1 in. dia to 8 ft square. Many of these openings were set to tolerances measured in thousandths of an inch.

The shield took 1000 cu yd of concrete. The lowest one-third of this concrete was placed by normal methods because of relative freedom from obstruction inside the forms.

**• Conventional placement** — Barytes for the ordinary concrete was stockpiled near a central mixing plant 4 mi from the MTR site. The mix was similar to that using normal aggregate. Cubic yard batches contained 486 lb of cement, 2369 lb of barytes sand, 3109 lb aggregate (1½ in to ¼ in). The water-cement ratio was 0.67 and the slump varied from 2½ to 4½ in.

This concrete was hauled in truck mixers after batching and mixing in the central plant. Half-size batches were used, because of the above-normal weight. Since the aggregate was quite friable, an attempt was made to transport the concrete without further mixing during transportation. This caused difficulty in starting up on arrival at the job site, and was abandoned. It developed that no great amount of aggregate breakup occurred when agitation in transit was employed.

**• Segregation a problem** — Hoppers and pipes placed the concrete inside the forms. Considerable difficulty was caused by "plugging" at the hoppers, and also in discharging from the trucks. Apparently this was due to segregation of the heavy aggregate in handling. The difficulty diminished after the mix was adjusted to allow a 4 in. slump.

Forms for the shield concrete were steel plates, rigidly braced from the inside. Where welding was permissible, the individual steel plates were sealed in that manner; otherwise they were bolted or keyed together. Forms were erected in two stages: for the conventionally-placed concrete and for the grout-intruded concrete of the structure's congested upper two-thirds.

To provide desired concrete density in spaces containing numbers of pipes and ducts, it was necessary to hand-place aggregates. The intrusion method not only made hand-placement possible, it also permitted a final check on the embedded items that might be subjected to displacement, immediately prior to pumping the grout.

The coarse aggregate for the grout concreting was stockpiled outside the reactor building. The minimum size coarse aggregate was ½ in., and 2,500-psi minimum strength was specified. Coarse aggregates were segregated into four sizes—5 in., 3 in., 1 in., 1½ in. and ¾ in.—with everything less than ½ in. being discarded.

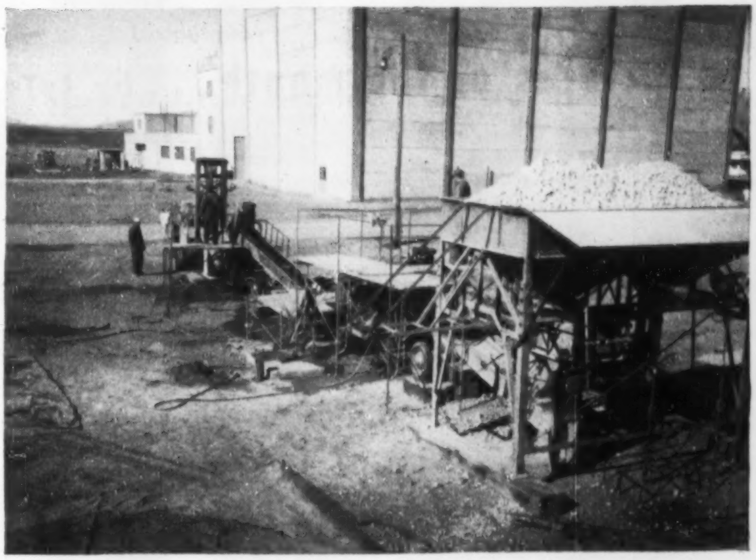
This graded aggregate was recombined before placement in the forms, but only smaller sizes were used in restricted spaces, where it was necessary to hand-place the aggregate around the embedded items. There was no requirement for close grading of this material. The important consideration was the percentage of voids; this was specified as 33% to 40%.

The fine aggregate for the grout was graded below the No. 30 screen, the larger sizes being eliminated to assure pumpability. Because of the fineness of this material it was stored indoors, and was sacked before being moved to the job site.

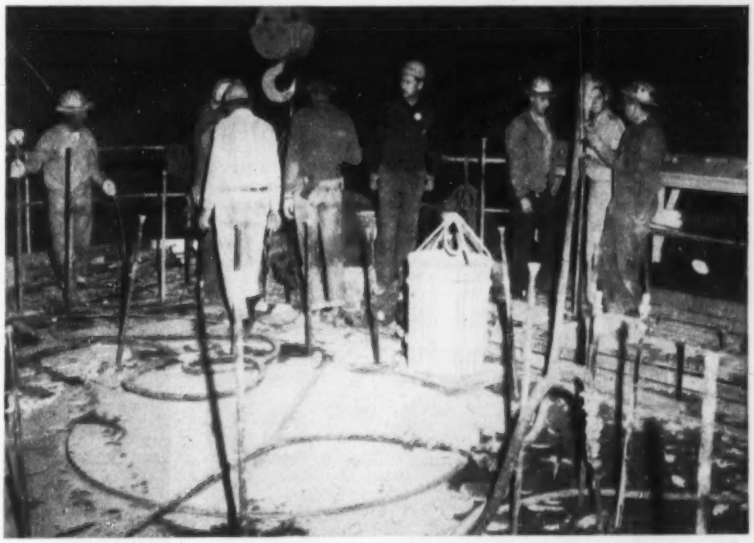
- **Barytes rewashed**—After the coarse aggregate was recombined in a portable batching plant, it was rewashed over a ½-in. screen, and then carried by a belt conveyor into one-yard concrete buckets. These were transported by fork-lift trucks into the reactor building, and the aggregate was delivered into the forms through hoppers and pipes, by an existing overhead crane.

- **Metal pipes best**—Canvas elephant trunks were used at first in an attempt to prevent breakage, but they proved inadequate. The canvas did not stand up, caused aggregate breakage, and was difficult to maneuver quickly. Six-inch metal pipes were substituted, and worked satisfactorily, although it was necessary to move the discharge con-

(*Continued on page 40*)



**BLENDING BARYTES**—Sized aggregates from separate stockpiles are run through weigh batcher (foreground) for blending, washed and screened to remove undersize (center), and loaded into one-yard bucket (rear). Fork lift truck takes bucket indoors.



**PLACING GROUT**—View at top of reactor shows the grouting operation. Projecting above aggregate are grout pipes, vent pipes and sounding-well pipes. Grout pipes, two of which are in operation here (right) are withdrawn as grout rises.

## Pointers on heavy aggregates and grout concrete

(1) Concrete using heavy natural aggregate offers a satisfactory and reasonably economical shield for the protection of people from reactor radiation.

(2) The grout-intruded concrete method offers advantages in placing heavy-aggregate concrete in complicated forms containing numerous embedded items, which must be set to close tolerances.

(3) Barytes aggregate processing costs are high, due to screening specifications and the friable nature of the ore. The rock should be handled by scoops or buckets, not bulldozers.

(4) Slump should be specified as 4 in., plus or minus 1 in., to facilitate handling and placement of concrete.

(5) Great care should be used in sealing openings in formed surfaces and imbedded items, to prevent leakage of water or grout when using the grout concrete method. In this respect, steel forms are more difficult to seal than wooden forms.

(6) The number of grout pipes should be held to a minimum.

(7) An 8-in. or 10-in. steel-pipe chute should be used in placing aggregate. Heavy belting can be used as baffles in the pipes, and as cushions in buckets and hoppers to reduce breakage.

*(Advertisement)*

# Pictures of the month . . . *by LeTourneau-Westinghouse*

**Roadbuilding in 150° heat** — Building a 250-mile highway through Arabia from the Port of Djeddah to the Mohammedan holy city of Medina, 3 Rear-Dumps haul crushed basalt and coral sub-base across the desert. Contractor T. W. Ward, Sheffield, England, says natives who had never been on trucks before learned to operate rigs' electric controls in a few hours.

**1 tractor, 4 jobs** — Tournatractor is the only tractor made which has the speed to do *ALL* dozing on a road contract. Producers Mining Co, Harrisburg, Ill. uses their Tournatractor for push-loading (above) . . . keeps 2 C Tournapulls "humping" on hauls as short as 250 ft one-way. It moves around job at 19 mph, clears stumps (below), levels windrows, places culverts, etc. Operator John Longmiere says it is "twice as fast as crawlers."

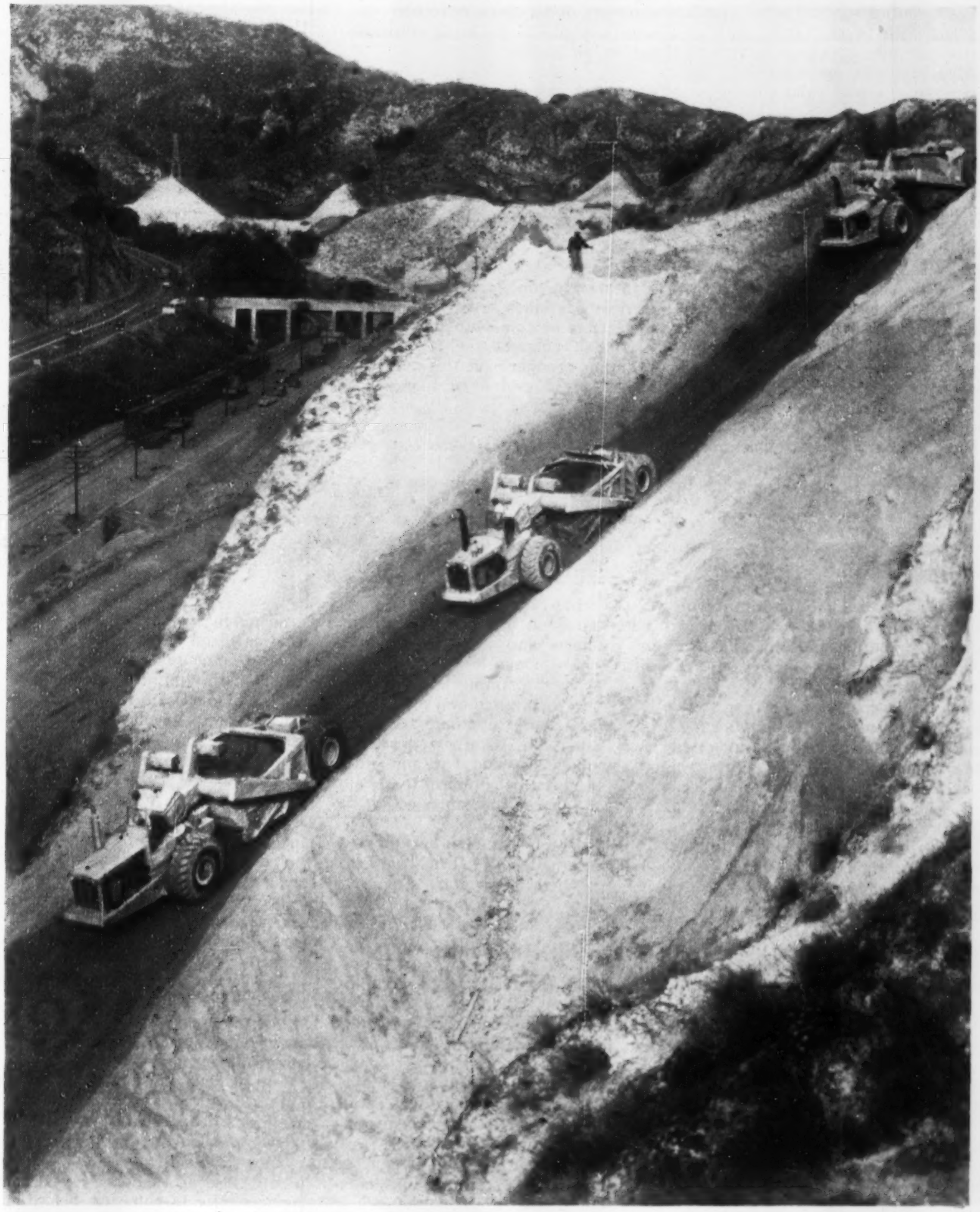
**Root for less** — To break up old pavement before widening Route 20, Asphalt Roadways Co of Buffalo chose this Rooter — the 5,500th produced by the LeTourneau-Westinghouse factory. Volume production made its price $300 to $500 lower than that of other nationally-marketed Rooters. On the job, it was pulled by a 148 hp crawler-tractor.

**Now a field, soon a factory** — 675 x 780 ft of fill will convert this hollow into a graded site for an Armed Services barracks fabricating plant near Harrisburg, Pa. Ritter Bros, contractors, use 2 Tournapulls to move dirt. The one above is a 7-yd, 122 hp "D", the other a 16-yd, 186 hp "C". Both have an exclusive differential to prevent cutting in on soft footing.

**3 machines faster than 1000 men** — It would have taken a thousand men 3 years to complete this 75,000-yd earthfill dam in Mysore, India. Even then, says the Engineer-in-Charge, compaction would have been inadequate. But 2 D Tournapulls moved all dirt, and a tractor-towed LeTourneau-Westinghouse Sheepsfoot Roller handled compaction to finish project in 3 months. On 1000 ft cycles, each 7-yd Tournapull made 28 trips hourly.

*(Advertisement)*

## **. . . with performance reports from around the world**



**12 mph, safely, down 35% grades** — Thanks to multi-disc air brakes that provide more braking surface on *one* wheel than most haul units have on *all four*, loaded Tournapulls here travel safely down 35% grades. Power kingpin steer, fast-acting electric controls, good visibility, 6 ft by 2 ft tires, all contributed to their safe, high-speed haul. Shown are 3 of the 8 C Tournapulls used by J. Tomei & Sons Construction Co, Van Nuys, Calif, to relocate Hwy 99 through Weldon Canyon, near San Fernando. Push-loaded with 13 pay yds of sand, clay and shale, each unit completed a 3000-ft. cycle every 5.5 minutes, despite steep grades. Combined hourly output for 8 "C's" totaled 1,040 pay yds. For more information, write LeTourneau-Westinghouse Co, Peoria, Ill.

Tournapull, Rooter—Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark Plc-659-G tinuously during placement to prevent breakage.

Placement of 1,292 tons of coarse aggregate took five days.

• **For grouting**—Grout pipes, ¾ in. dia and with beveled ends, were inserted in the aggregate as placing started, and were extended above the top surface. Grout pipes curving under obstructions were coupled immediately above the elbow so that the straight section, together with all entirely straight grout pipes, might be pulled as the grouting operation progressed.

Vent pipes, also ¾ in. dia, were coupled in a similar manner. Sounding wells, consisting of 2-in. pipes, slotted through their length, also were provided to check the grout level during pumping, but these remained in the concrete. Altogether, about 150 pipes were placed just for the grouting alone.

Grout mixing equipment was set up outside the reactor building. Discharge lines from three group pumps were led into the building and to the top of the reactor through 150 feet of 1-in. hose and pipe. These lines were interconnected near the reactor top, so that pumping could proceed from any of the pumps.

It had been intended to place about a foot of water inside the forms. This water would have been displaced upward as grouting proceeded, and it would have kept the aggregate wet. This plan was abandoned because of time and expense in getting steel forms sufficiently tight. Grouting was started slowly and gradually increased to a rate that raised the grout level one foot per hour. This was reduced to ½ ft per hour after a height of 2½ ft had been reached, because of leakage from the lower portion of the forms. This rate was continued except for minor interruptions until the entire pour was completed. The most serious interruptions were caused by mechanical failure of the mixing plant and by plugged pipes and housing. No difficulty was encountered in starting up equipment after any of these interruptions.

Topping off was done by using short inserts with beveled ends, which were worked into the surface aggregate until they contacted the upper surface of the grout.

• **No flotation**—Original plans called for a top form to prevent flotation, as well as for leveling off the upper face. This was abandoned when tests indicated that with a heavy aggregate, such as that used, no flotation would be expected. The top of the intruded concrete was 6 in. below the required top-of-concrete elevation. Work stopped at that point after a 56-hour period in which 5,865 cu ft of grout were placed.

After 12 hours the surface was cleaned of excess grout by air and water jets, and a course of regular concrete was placed to bring construction to full height.

• **Costs**—A complete record of costs was kept for possible use in future designs. The aggregate as received at the site cost $19.69 per ton, and the processing, stockpiling and loss brought the total cost to $31.61. Of this, $9.71 per ton represented freight costs. The overall cost of the concrete in the forms was $193.25 for that conventionally placed, compared with $188.41 per cubic yard for grout concrete.

Upon completion of the reactor, and its subsequent operation, a comprehensive survey of the radiation integrity of the shield was made by the operating contractor, Phillips Petroleum Co. Those making the survey noted that in general the bulk shield showed no radiation leaks attributable to faulty construction.

# Bidding for engineering services

**Interest among our readers in the subject of bidding for engineering services continues so active that it seems desirable to continue to publish the letters of comment as a group rather than separately in our "Reader Comment" columns.**

**Earlier comment on this subject was published in ENR Jan. 28, p. 42; Feb. 4, p. 32, and April 1, p. 39. Editorial comment on this subject was published in ENR Nov. 19, 1953, p. 167 and Feb. 11, p. 80.**

## Bidding is with us

Sir: Regarding the competitive bidding for professional engineering services, three more thoughts:

(a) Let's face it: in some circles it's already with us, either openly or covertly;

(b) He who, in decrying the practice, sounds off only from a platform of stuffiness and tradition, deserves little sympathy and less support;

(c) Caveat emptor; let him who takes bids for the removal of his classic appendix bear in mind that he is now going into the marketplace on a shopping trip, and like any other bargain hunter he is subject to the applicable rules of the game: eat or be eaten.

Richard J. Donovan,
*President, Richard J. Donovan, Inc.,*
*Constructors—Engineers*
*Winchester, Mass.*

## Price will still control

Sir: Your editorials and the resulting comment on "Bidding for Engineering Services", it seems to me, have failed to put sufficient emphasis on certain fundamental facts which should be plainly evident to all professional engineers who have had a wide experience in performing engineering services for public bodies.

It seems that the stumbling block which has caused all this misunderstanding of the subject is the lack of understanding of what constitutes the lowest responsible engineering contract. I do not like the word "bidder" as that term should be reserved for the contractors in the construction field. But let us grant that some state, county, or city is operating under some regulation requiring that engineering work be given to the engineer who will do the work the cheapest, and let us analyze the problem and see who is the cheapest responsible engineer.

The percentage that the engineer charges for the services cannot be considered by itself as determining the lowest price for the completed work, but must be considered along with an analysis of the finished product. Perhaps the product of the cheapest engineer is lacking in efficiency, durability, strength, completeness, or in other ways. If so, the ultimate cost of the work under the engineer proposing this cheap price, might in the end easily be much higher than under a much more competent engineer, who quoted a higher percentage for his services. The records down through the years show that the incompetent or inexperienced engineer generally offers to do work cheaper than the competent experienced engineer.

After attending between 500 and 1,000 city council meetings, and after observing the reaction of hundreds of councilmen to various measures brought before them for their consideration, under the conditions which quite generally prevail in city council meetings, I believe that I can make the following statement:

Under normal conditions as outlined below, if the selection of an engineer were to come up before an average city council in open meeting, and the applicant's qualifications, together with his fee were in each case read out in the meeting, the fees would make the deepest and most last-

(*Continued on page 42*)

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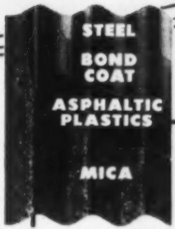

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ing impression, and the contemplation of the lowest fee would so detract from and overshadow all the qualifications, that the qualifications would get very little consideration. Unless the engineer who stated the lowest fee were notoriously unqualified, generally he would get the appointment without much discussion.

It must be remembered that the great majority of councilmen are not engineers, and very few have ever had any experience in engineering matters. Therefore they are not qualified to analyze and evaluate an engineer's experience record to the conclusion that they would go on record favoring the appointment of an engineer on a fee higher than the lowest offered on the ground that the additional experience made available, and the extra services to be rendered, would more than compensate for the difference in the fees.

It must also be remembered that the majority of the people who attend council meetings as spectators, are what might be called the opposition element. They are generally against any progressive measures, because that means spending money. They also watch the council very closely to see that they spend the least possible money for anything that must be purchased.

Engineering in my opinion is a profession which ranks well toward the top of the list of professions. To keep it there all engineers should strive constantly for the best in all phases of their work. This cannot be done by cheap bidding in order to get jobs, because taking a job this way would mean slighting the work, which would result in an inferior job.

John S. Bates,
*Bates and Trotter, Consulting Engineers*
*Berkeley, Calif.*

## Bigness adds complications

Sir: Your current series of letters on bidding for engineering services is very stimulating. Engineering groups are making great efforts and strides to recoup the professional status they once enjoyed and to inform the public of the functions of engineers. Engineering is a profession, though I doubt that it will ever reach the level held by doctors and lawyers. Because there is so much business mixed in with it, particularly on account of the large crews of engineers employed by governmental bodies and large engineering firms. Medicine and law are restricted generally to smaller groups where there is more personal contact with the client and each professional is involved in a larger scope of each problem.

Still, engineering is a profession and professional standards are necessary to allow good engineering. Recommended fee schedules are necessary to obviate price wars and a general deterioration of engineering. This does not mean that one firm cannot do the same good work at less cost than another firm; some engineers are more resourceful and industrious than others and are able to hold down their overhead. This is how competition works in engineering.

It is not realistic to compare the bidding procedures of contractors and engineers. The contractors have voluminous plans, specifications and reference codes as their bidding criterion. There is no counterpart of this in engineering. We usually start with a blank piece of paper, and then conceive and practically build the entire project from scratch, drawing on technical training, experience and the owner's nebulous concepts.

Would it be wise to engage a city engineer or building inspector on a basis of the lowest bidder? No, because there are personal services for which the best candidate should be selected.

Governmental supplies are purchased by bidding to avoid favoritism and corruption. Construction work is also let by bidding, but reliable contractors are governed by strict and voluminous specifications. If a municipality or private concern wants to buy engineering at the lowest price, it is hoodwinking itself. Any private concern is privileged to buy cheap materials, labor and service. But it is in the interests of the public welfare for governments to engage administrators and professional service on the basis of individual competence rather than by bidding.

Frank A. Randall, Jr.
*Frank A. Randall and Sons*
*Chicago, Ill.*

## Specifications are lacking

Sir: In all of the discussion concerning the propriety of bidding for engineering contracts the endeavor is made to draw a parallel between bidding by an engineer and bidding by a construction contractor.

When a contractor bids on work to be constructed he has before him a set of plans showing, in precise detail, what is to be built and where, and a set of specifications stating exactly how and of what materials. Even so, high bids commonly range as much as fifty percent over the low.

I cannot imagine a contractor bidding without plans on a specification such as this: "An office building about 30 stories high which when finished, will be of dimension, quantity and character of materials, workmanship, strength and arrangement which will be satisfactory to the owner." Yet that is comparable with bidding on engineering.

To bid on engineering you must have the engineering delineated and to delineate the engineering you must first have all or a substantial part of it performed. Since this is not feasible, the practice has developed of compensating the engineer on the basis of a percentage of the ultimate cost, such percentage being established as just and fair for a given broad classification of work over generations of competitive engineering performance and on the basis of engineering cost records. This is not a matter of ethics so much as practicability.

I have just witnessed a case in which an architect undertook a large warehouse project on a fixed fee basis. He assumed drainage over the surface and allowed $200 for drainage design in his fee. As the project developed it became apparent that a major drainage project was involved and he ended by employing an engineer to design an underground drainage system costing $275,000. We do not ask contractors to absorb such extras. We cannot reasonably ask it of the engineer.

To adopt the practice of bidding for engineering services will require the establishment of specifications, delineation of the work to be performed and acceptance of work so performed under the letter of the contract complete or incomplete, under strict contractural law. I do not fear competition. But if I am to compete by bidding I want to bid on precisely the same product as my competitor, no more and no less, and when I have delivered that product I want to be free of any stigma or penalty if the product ordered and specified turns out to be incomplete or disappointing.

Let us face the fact that in bidding we bid in this manner or we operate under a vague arrangement which invites the professional sharpshooter as a substitute for the responsible professional performer. The matter must be handled professionally or contractually. The two systems are fundamentally different and will not mix. I am convinced that the professional approach is the sounder.

M. R. Mitchell
*Mitchell & Hunt*
*Consulting Engineers*
*San Antonio, Texas*

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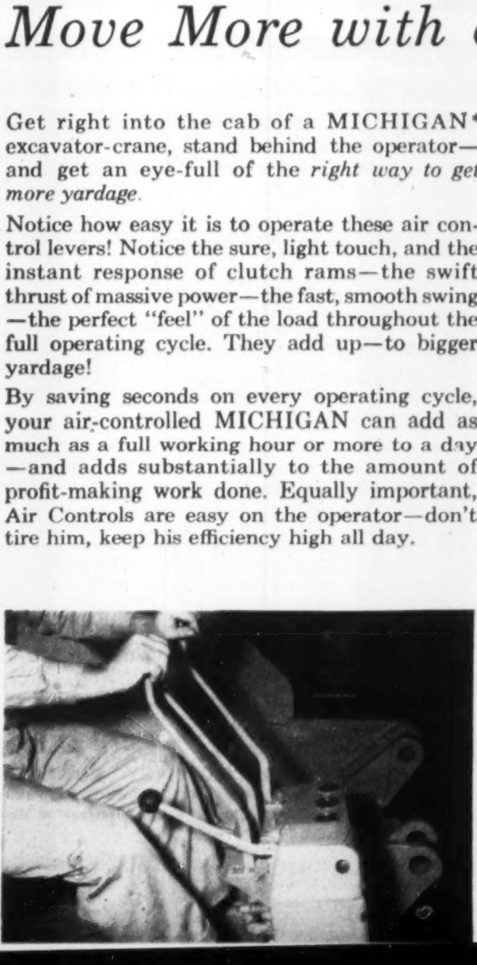

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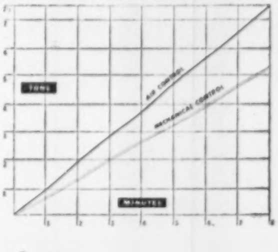

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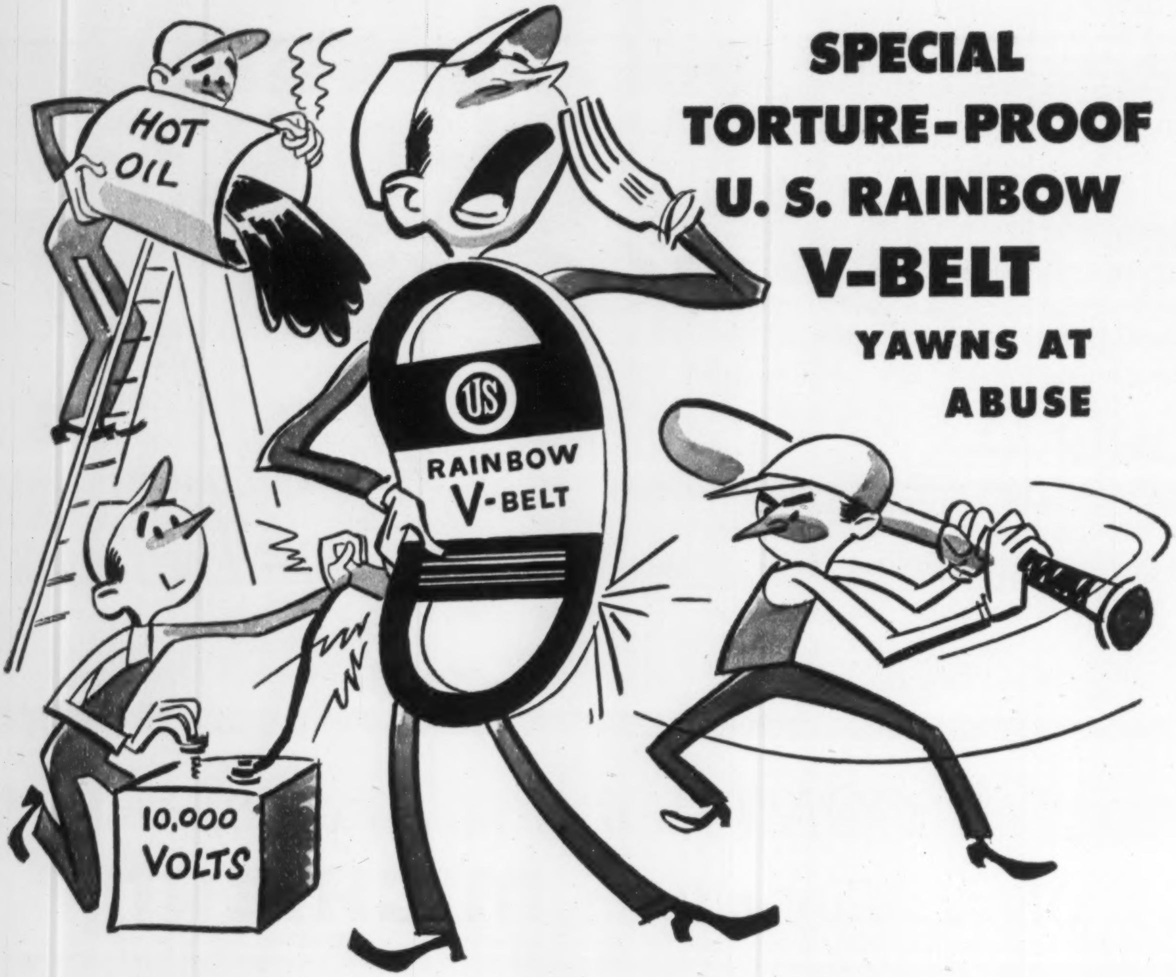

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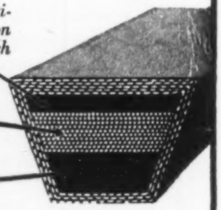

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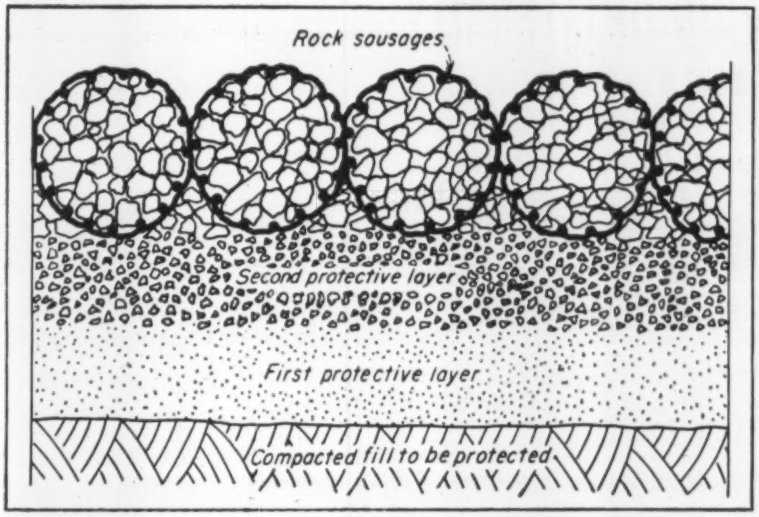

**CRUSHED ROCK** tightly stuffed into tubes of spiral woven fencing laid on a blanket of graded material constitutes a sausage installation.

**TEST SETUP** shows how sausages are laid in direction of flow.

# Rock "sausages" provide economical protection against erosion

C. J. Posey
**Head, Department of Civil Engineering, State University of Iowa, and Director, Rocky Mountain Hydraulic Laboratory**

Tests made at Iowa City, Iowa, and at Allenspark, Colo., have shown how rock of comparatively small size may be stuffed into wire "skins" to make sausages which can be arranged to protect earthen embankments from swiftly flowing waters. Although the tests have not proceeded to the point where the dimensions necessary for various exposures can be given, the protection is clearly better than that provided by any previously known method. Hence, it is felt that a description at the present stage of development may make possible its use under a variety of conditions during the coming construction season.

Details of the construction necessary for the effective utilization of rock sausages were developed during a three-year test program at the Iowa Institute of Hydraulic Research, conducted for the Iowa Highway Research Board. The use of the sausage type of construction was suggested by Chinese practice in making Yellow River closures, as described to the writer by Dr. C. H. Yen. A similar construction with wire, but lacking in certain essential respects, was used for many years in resisting erosion from torrential streams carrying monsoon runoff from the southern slopes of the Himalayas. In referring to this work in "Egyptian Irrigation," Willcocks and Craig use the terms "wire sausages" and "wire gabions."

The sausages developed in the present investigation are made of tubes of spiral-woven wire fencing, with the wires running lengthwise of the sausage so that when it is stuffed tight enough tension is put into the wire skin through lateral stretching of the spiral loops to provide two-dimension compression in the plane perpendicular to the axis of the sausage. The sausage is slightly flexible, has good compressive strength because of the squeezing, and good tensile strength because the main direction of the wires is longitudinal.

The sausages may be made either by end-filling, in which case care has to be taken to keep the portion about to be filled under constant tension and keep the tamping about constant, or by lacing up with the aid of special supports and closing tools. The latter method gives a better job since it is easier to avoid leaving longitudinal open spaces under the sausages.

The rock used in the sausages should be the largest that can be obtained and handled economically and it must have a suitable grading, as explained later. The mesh size and sausage diameter are proportioned to the rock size. The diameter of wire should be large enough to permit handling lengths of sausage of say twenty diameters without danger of breakage.

In the tests still under way at Iowa City, the wire is No. 9 gage, the mesh 2 x 2-in, and the sausage circumference 4 ft. The crushed limestone was retained on a 2-in. sieve, but would pass a 6-in. sieve. The sausages were laid in a single layer across a highway embankment constructed in the laboratory's river flume so that flow is parallel to their axes. It is not known what depths of overflow this installation will resist, but it seems likely that it will be 10 to 20 times the two inches of head that would endanger the same installation without the addition of the wire.

For permanent installations, it is likely that heavily galvanized or even stainless-clad wire would have to be used. F. P. Anderson, in the paper referred to by Willcocks and Craig, reports a life for galvanized wire of No. 6 B. W. G. of 15 years under Indian conditions. His sausages were 5 ft in diameter and 50 ft long. If safety were a prime requisite, as for a spillway over the top of an earth dam, a double layer of sausages would be highly desirable. In any case, the rock gradings in the sausages and in the layers under them are extremely important.

The first step is to obtain a grain size distribution of the soil to be protected, which should be either in the undisturbed state or thoroughly compacted throughout any fill section, so that no mass settlement need be feared. A layer of coarser material is to be placed over the soil, extending continuously over the entire surface exposed to erosion. The size distribution of this first layer needs to have a certain relationship to the material protected, such that if an upward pressure gradient occurs, the fine material will not be washed up into the coarser material, which thus forms an "inverted filter."

The grain-size specifications for a material that will meet this requirement were formulated by Terzaghi and, after a slight revision on the basis of extensive tests at the U. S. Water-

*(Continued on page 46)*

ways Experiment Station at Vicksburg, are stated as follows:

$$\frac{D_{15}\text{ Filter}}{D_{85}\text{ Base}} < 5$$

$$4 < \frac{D_{15}\text{ Filter}}{D_{15}\text{ Base}} < 20$$

$$\frac{D_{50}\text{ Filter}}{D_{50}\text{ Base}} < 25$$

Fifteen percent, by weight, of the filter material (the protective cover) is finer than the size indicated by "$D_{15}$ Filter"; 85%, by weight, of the base material (the soil to be protected) is finer than the size denoted by "$D_{85}$ Base", etc.

Although these specifications look a little complicated, it is often found that natural material can be made to meet them with comparatively little blending or screening.

The thickness of the protective layer required is probably less than a dozen times the maximum grain size. However, this is less than it is practicable to place, so that the design thickness should be the minimum that can be spread with the equipment available, keeping in mind that it must provide complete coverage.

The underlying soil being protected with a layer which will act as an effective inverted filter, the next step is to protect that layer with another layer which bears the same relationship to it, and so on to the material used in the sausages. The sausages should lie along the direction of flow, should be fastened together at closely spaced points, and should cover the entire area subject to erosive velocities without any holes or "skips".

## Compound stops salmon

J. L. Hart, director of the Pacific biological station at Nanaimo, B. C., believes a solution may have been found of the problem of salmon jumping power dams and swimming through irrigation ditches and polluted waters on their way to and from inland spawning areas.

The answer may lie in a substance—still unidentified—found in the skin of the human hand and also in the skin of sea lions, dog's paws and deer hooves. Small doses introduced into the water at Stamp Falls fishway, Vancouver, B. C., noticeably reduced upstream migration of salmon.

The experiments started accidentally when someone observed that some odor from the human hand had a repellent effect on the salmon.

In further tests, 25 grams of ground skin in a water solution were added to the stream. In positive tests the fish stopped for 15 min after introduction of the test solution. This solution was diluted to one part in several billion.

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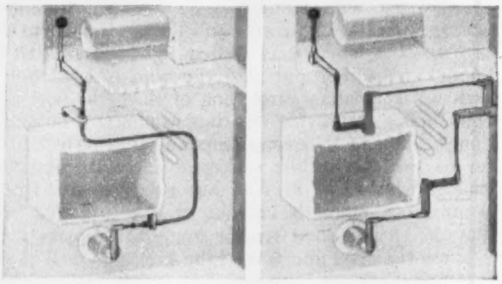

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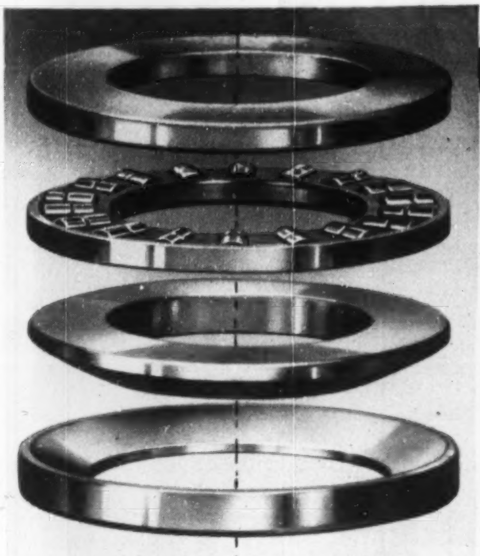

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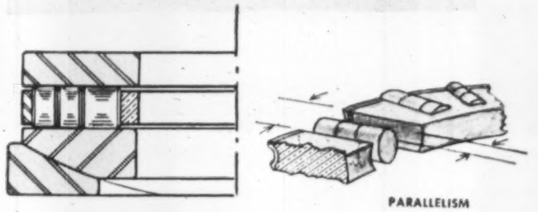

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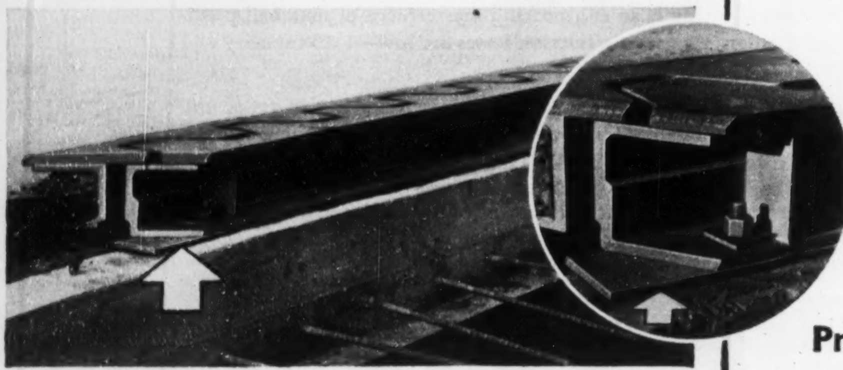

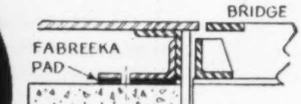

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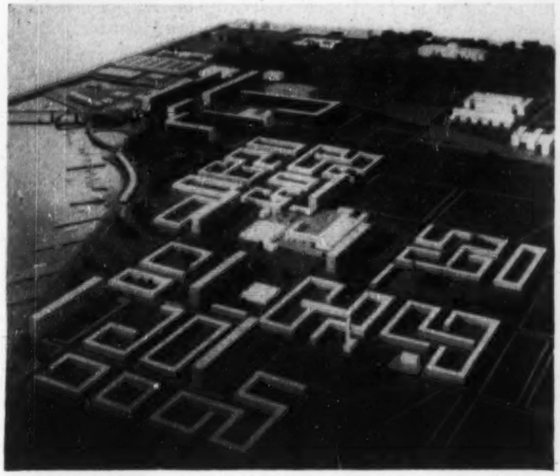
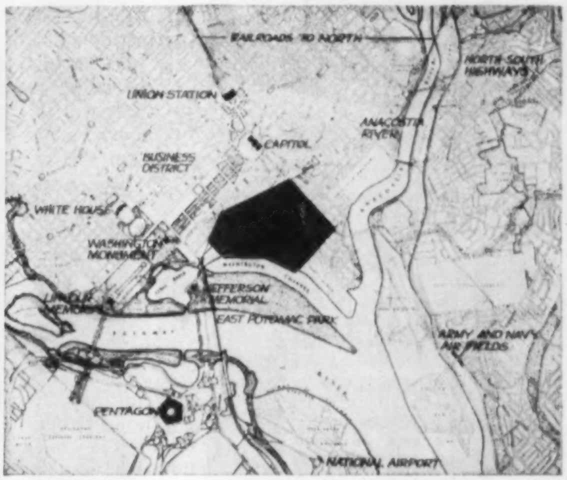


**SOUTH MALL and surrounding buildings (upper left) are slated for first priority under Webb & Knapp plan.**



**HIGH RESIDENCE-COMMERCE-RECREATION potential is presented by the location of the redevelopment site (in black).**

# S. W. Washington, D.C., faces $½-billion cleanup

The recent demolition of a slum dwelling wall in "Project Area B" of the Washington, D. C., Southwest Washington Redevelopment Area was the ceremonial launching of a program that ultimately will lift 700 acres of the city to the level of a creditable residential-business area. Construction of first new units is scheduled to start early in 1955.

Two phases of redevelopment, affecting 427 acres, are more firmly set now that initial action has been taken. Area B, comprising about 75 acres, is the first to get started.

Predominantly residential, this area will provide 900 dwelling units occupying 25 acres of the original tract. Six acres are zoned for retail business—three for business now situated in the area—six acres for light industry and the balance, running to some 38 acres, will be set aside for streets and public use.

The 900 residential units will be divided among four-bedroom row-houses with the common party-wall construction peculiar to the area, three-bedroom row-houses, and "flats" or duplex row-houses. There will be several seven-floor, skip-floor-elevated apartments, and one eight-story elevator apartment.

The seven and eight-story structures will be steel frame, fire resistant buildings. Architect Milton J. Trassas, of Washington, designed all buildings, and Bush Construction Co., of Norfolk, Va., is the developer.

Financing will be through FHA Title I.

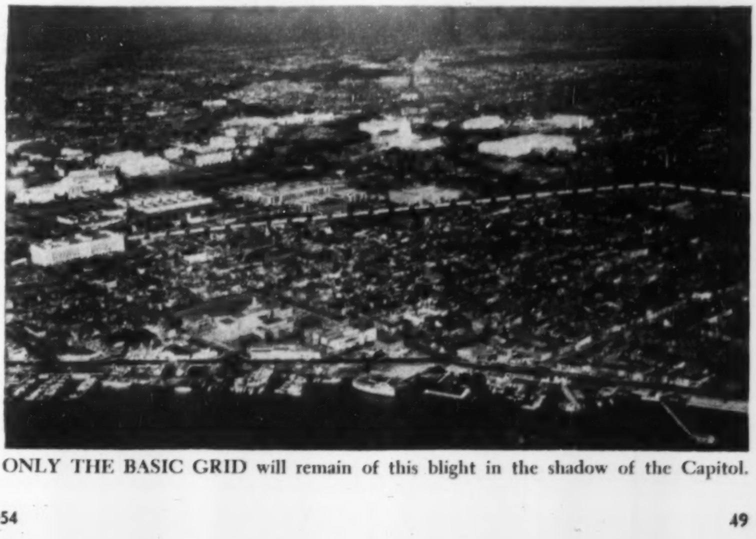
- **The second phase**—By far the larger of the two operations—and still subject to completion of extensive studies—is planned for the southern and western portion of the development area.

Some 330 acres have been and will continue to be under study by Webb and Knapp, of New York City, for redevelopment into a community integrated with the capital proper according to the original thinking of Pierre Charles L'Enfant, French engineer who planned the original layout of the capital.

(Perhaps one of the first American lessons in the right of eminent domain was the course of events leading to L'Enfant's dismissal by President George Washington. When the Frenchman's "grandiose" street plan, featuring 100-ft avenues was upset by encroachment of a new manor house that lay as an obstruction, L'Enfant ordered it removed. The wealthy landowner refused to move it, so the architect had it demolished. Exit L'Enfant.)

A new residential pattern based on a combination of "townhouses," (three story, single family dwellings) two-story flats (one above the other) and high-rise apartments interspersed around landscaped courts will be set up. These residential "squares" will be built on existing city blocks, permitting use of present utility and sanitary facilities, eliminating all al-

(*Continued on page 50*)



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leys. The use of facilities already in the ground is of greatest importance since the district will be put to no expense in this direction.

Of the total of 5,141 dwelling units (including those in Project Area B) there will be more than 1,500 "town houses," 900 flats and 1,200 apartment units scheduled under the W & K plan.

An expressway to by-pass traffic through the area is already committed and in the planning stage. It will be carried underground or depressed, as currently planned, passing under the proposed South Mall (see illustration.) Railroad tracks now below grade at the section where the new mall will be constructed will pass under it at a point farther to the north.

A Webb & Knapp spokesman said that to date his company had spent a great deal of money in establishing the plan, and had allocated $350,000 additional to be spent during the next twelve months on its crystallization. 'Companies just don't throw that kind of money away," he said.

The New York firm's plans are now fixed in their major outline and subject only to change within this framework, which has as its foundation three principles:

1. To reintegrate southwestern Washington into the greater city through sound planning and the recreation of the area's economic and social life by putting the land to its highest and best use;

2. To redevelop according to an accepted overall plan—with responsibility fixed in one group—using the widest diversity of local architects and builders; and

3. To provide the impetus for redevelopment of similar areas in the shadow of city halls across the country.

**• Features of the plan**—The South Mall is number one in the proposed sequence of project development in the area. This new mall is to be a 400-ft-wide by 1,800-ft-long planted area that will join at right angles with the Capitol Mall that links the Capitol building and the Washington monument with the Lincoln Memorial.

The mall, designed as the southern gateway to the city, will be cleared and constructed simultaneously with buildings adjoining it. W & K believe that L'Enfant's Plaza, east of the mall, and waterfront construction at the southend can be done separately, but should precede residential development, since these improvements are not dependent on Southwest Area trade.

**• L'Enfant Plaza**—The plaza, according to plans, will provide a monumental setting on 20 acres for a national opera house, symphony, theaters and convention hall—now lacking in the city, but at present contemplated in bills pending in Congress. It will provide the district's tourist industry with a place for diversified recreation to supplement the sight-seeing of museums and monuments.

Planned are over 300,000 sq ft of space in the building surrounding the plaza to be used for shopping, exhibiton, state displays and commercial enterprises.

Parking for 2,500 cars is planned beneath the plaza and extending under a portion of the mall.

**• The high ones first**—Elevator apartments that require minimum ground area—thus easing the relocation problem—should be the first residential undertakings. Only enough single dwelling squares will be constructed at first to produce a convincing entity and establish the tone for future stages, according to the plan.

Town Center, an eight-acre focal point in the residential area will comprise 200,000 sq ft of shopping area with almost as much parking space. The center also will include such public and quasi-public buildings as schools, libraries, and community buildings.

Waterfront shopping will include shore-front concessions, specialized restaurants and boat accommodations on six acres.

## New look for New Orleans

A dedication ceremony recently placed the cap on the New Orleans, La., $57-million public improvement program (ENR Jan. 28, p. 57).

The $2.25-million station building, last unit of the $16-million Union Passenger Terminal has been completed to round out the entire improvement program.

Included in the over-all picture were unification of five sets of passenger tracks, replacement of five scattered and obsolete depots, elimination of 144 grade crossings and construction of new arterial streets that tie in with the new terminal.

In the words of De Lesseps Morrison, the city's mayor, "This program is providing our city with an entirely new transportation system and has been the means of accomplishing many needed public improvements that otherwise would not have been possible."

(*Continued on page 52*)

THE ACTUAL IS LIMITED: THE POSSIBLE IS IMMENSE
NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT
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# PROOF...

# WELDED DESIGNS COST LESS TO BUILD

*Welded design is credited with speeding construction of this 15-story, 48′ by 98′ structure as:*

## 575 TON FRAME ADDITION IS COMPLETED IN LESS THAN TEN WEEKS

RISING costs of materials and labor can be offset by designing structures to take full advantage of arc welding. First of all, savings in steel of 10 to 20 per cent are possible through rigid frame, continuous beam construction and elimination of rivets and elaborate splice plates. And, as shown in the recent construction of this multi-story addition, fewer erection manhours are needed, shortening construction time by a substantial amount.

In the 575-ton St. Vincent's hospital addition, structural steel members using clip angles are fabricated at low cost with welding. Clip angles are welded to beams and columns with single-pass welds. They are bolted in place, plumbed, then arc welded with Lincoln "Fleetweld 7" using "Shield-Arc" engine-driven welders. Columns adjacent to existing buildings are attached to existing steel at each floor simply by breaking through brickwork and welding an angle iron connection to the columns.

*Architects:* Eggers & Higgins; *Engineer:* Wilcox & Erickson; *General Contractors:* Vermilya Brown Company; *Steel Work:* Grand Iron Works, Inc.

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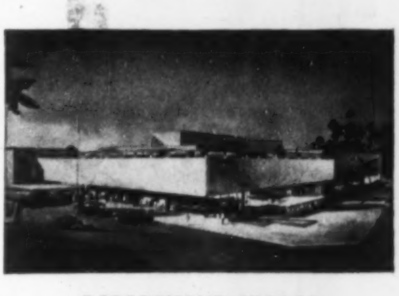
**APARTMENTS**

**Fig. 1. Saves Over $30,000** *on 14 story framework for Broadview Apartments, Baltimore, Md. Steel tonnage is cut from 2045 to 1960 tons. Architects: Palmer, Fisher, Williams and Nes, Baltimore.*

**GYMNASIUMS**

**Fig. 2. 20% Less Steel** *is needed because of rigid frame construction made possible by arc welding. Overall saving is 6 to 10 per cent. Consulting Engineer: David R. Graham, Tulsa, Oklahoma.*



**DEPARTMENT STORES**

**Fig. 3. Cuts Steel Tonnage 15%.** *Through welded structural design, it was possible to save 15% on steel in the framework for J. W. Robinson's new department store in Los Angeles. Architects: Pereira and Luckman and Charles O. Matcham.*

CEMENT GUN CO. RESTORES BRIDGE

Photo above shows the disintegrated condition of an abutment on a reinforced concrete bridge in a large Western Pennsylvania city. Repair work on this structure necessitated an almost complete rebuilding of the abutment. To accomplish this, the end span was jacked up and new expansion plates were placed at the bridge seats. In addition to repair of abutments—beams, girders, and arch ribs were reintegrated with "GUNITE" wherever disintegration had taken place.

This is just one of many typical "GUNITE" repair jobs which have been done by our contract department for Railroads and State Highway Departments throughout the country. For information on "your job" and description of many other "GUNITE" jobs performed by us send details and request catalog A2400—on your letterhead, please.

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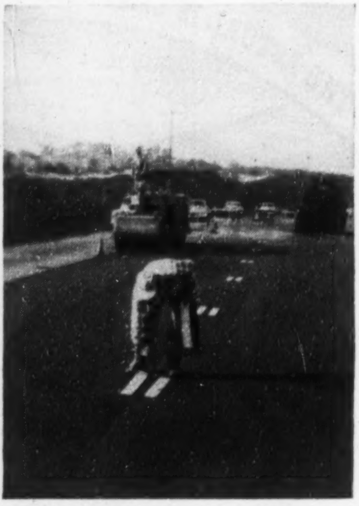
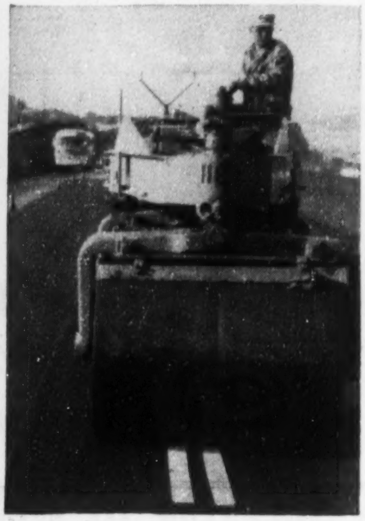


Lay it down . . .



. . . press it on

## . . . Result? a traffic lane and fewer confused drivers

Engaged in an extensive program of highway lane alterations, California's division of highways was faced with shifting traffic lanes to allow construction operations without drastic interference with vehicle movement.

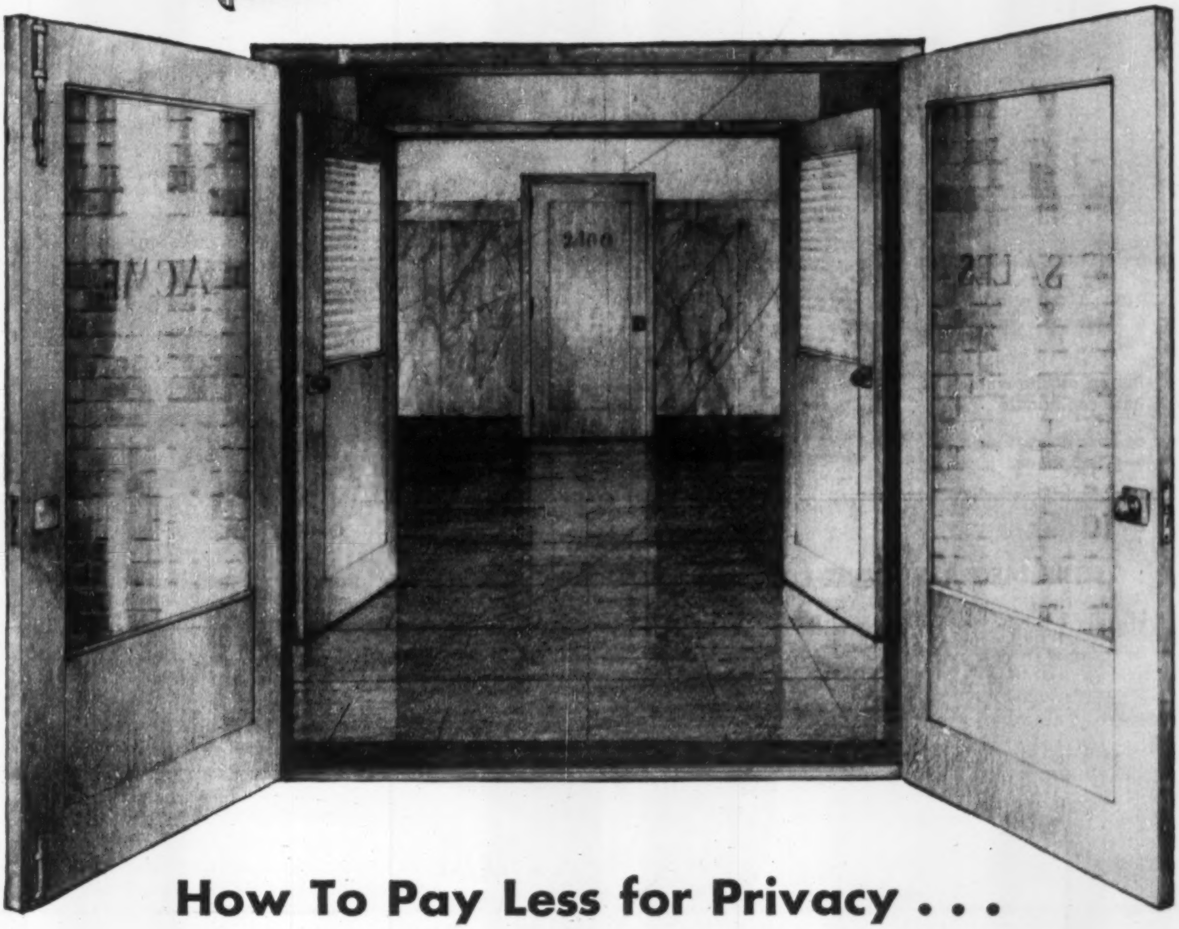
During the course of construction of a truck-passing lane, carried on jointly with new paving (ENR April 22, p. 46), a large volume of high speed traffic made it necessary to keep four lanes open at all times, plus room for the contractor to carry on his grading and paving operations.

To eliminate undue delays it was apparent that traffic lanes would have to be changed a number of times with speed and efficiency.

(*Continued on page 54*)

Fenestra 50 YEARS OF BUILDING PRODUCT LEADERSHIP

*"A salute to those who made it possible"* *



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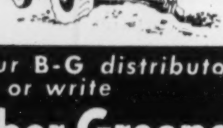

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**Write for new Bulletin**
Important facts for engineers about Vibroflotation.

V-7

VIBROFLOTATION FOUNDATION CO.
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The usual methods of pavement marking could not be considered because of the impossibility of obliterating stripes, and the resulting confusion to motorists after one or two shifts in the lanes had been made.

• **The solution**—W. T. Rhodes, resident engineer in District XI, where the project was under way, devised a solution of the problem. He took a 36-in. roll of heavy roofing paper and painted one side with white traffic paint. He then applied reflective glass beads to the wet surface.

Rhodes then cut 4-in. strips from the roll to form 4-in. x 36-in. ribbons of the material.

On old pavement, the strips were held in position with an asphaltic emulsion until traffic sealed them into the pavement. Rhodes advises application of only enough adhesive to hold strips in place. In a short time the strips will adhere without trouble because of the kneading action of traffic. Use of too much adhesive may necessitate burning off the strips, leaving black lines that are almost as confusing as painted lines might have been.

If applied correctly, the strips can be removed easily with a grader blade or square pointed shovel.

• **On new plant-mixed surface**—Application on new pavement is done by one man. He places the strips, without adhesive, on the warm pavement just prior to final rolling. The heat from the pavement, plus a pass with the roller, bonds them to the surface, resulting in a clearly defined lane, ready for use as soon as the pavement is open for traffic.

The slight elevation of the strips above the pavement apparently creates excellent visibility, especially at night under headlight beams.

## Connecticut woos world trade as port authority is urged

The Connecticut State Development Commission has advocated the creation of a state port authority to develop and operate port facilities.

The commission's chairman, William H. Mortenson, believes that his organization should take the lead in establishing such a program. The authority would have power to acquire land and develop industrial sites near ports, thus increasing their value. Under the plan, according to Mortenson, the authority would have more power than chambers of commerce or other civic units interested in port development.

It is hoped that the authority would be self-supporting after the redeveloped ports become operative.

Under a tentative schedule, New London would be the first to receive attention, with Bridgeport following immediately. The former, according to the chairman, is hampered because imports greatly exceed exports—an unhealthy top-heaviness that could be remedied by authority action in developing more industrial plants in the harbor area.

The increase in momentum of the authority movement is attributed to re-opening of Connecticut ports to world shipping during labor and racketeer troubles on the New York City waterfront.

## Built-in "fire protection" for Quaker City garage

Philadelphia's managing director, Robert K. Sawyer, has announced plans for an underground parking garage and firehouse to be erected under the old Broad Street Fire Station site.

Preliminary plans for a 600-car capacity on five underground parking levels, show a 55-ft depth for the building with the uppermost parking floor 11 ft below grade. Each level will be 318 ft long and 139 ft wide.

The garage structure with an underground firehouse integrated with it will cost an estimated $2.25 million.

The plans have been presented to the city's parking authority for study.

Sawyer and the City Planning Commission—of which he is a member—are at odds as to the treatment of air rights at the site. Sawyer endorses the recommendation of Wallace and Warner, the architects, that the garage be covered over and landscaped as a park. The commission is on record as favoring a tall building on stilts for the half-block area.

## Ambulance directs own traffic

In Los Angeles, a city ambulance, equipped with an emergency control system recently turned all opposing traffic lights red and sped through without hesitation.

It was a demonstration of a special electronic traffic signal controller that consists of a small radio transmitter attached to the emergency vehicle that sends out a short-wave directional beam activating a receiver installed on intersection semaphores. It causes all lights one-quarter of a mile ahead to turn red for side traffic during a 15-second period, thus clearing busy intersections in its path.

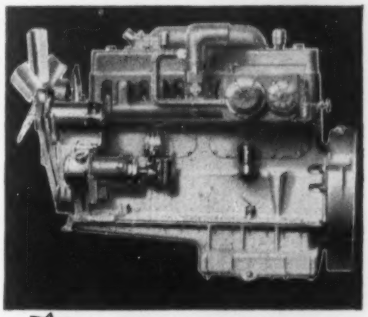
(Continued on page 58)

**RALPH KRESS, Exec. V. P. & G. M. of Dart Truck Co., has created a heavy-duty truck of new design, Waukesha Super Duty Six powered**

new design **FOR HEAVY DUTY**

**POWERED BY WAUKESHA**

Utilizing the full power of its Waukesha 6-WAKR Butane Engine for driving—the newly designed 30-ton Dart 35-SA End-Dump Truck is most unusual. All auxiliaries, including the cooling system, are driven by a smaller engine ... a Waukesha 195-GKU. Mounting the engines amidships (centered between the wheels), and the wagon-type front axle, both exclusively Dart, give many advantages. Waukesha power means payload performance plus economy.



☆ **Powering this Dart 30-tonner is this 6-WAKR Butane Super Duty Six — 6¼-in. bore x 6½-in. stroke, 1197 cu. in. displacement, 290 horsepower at 1800 rpm**

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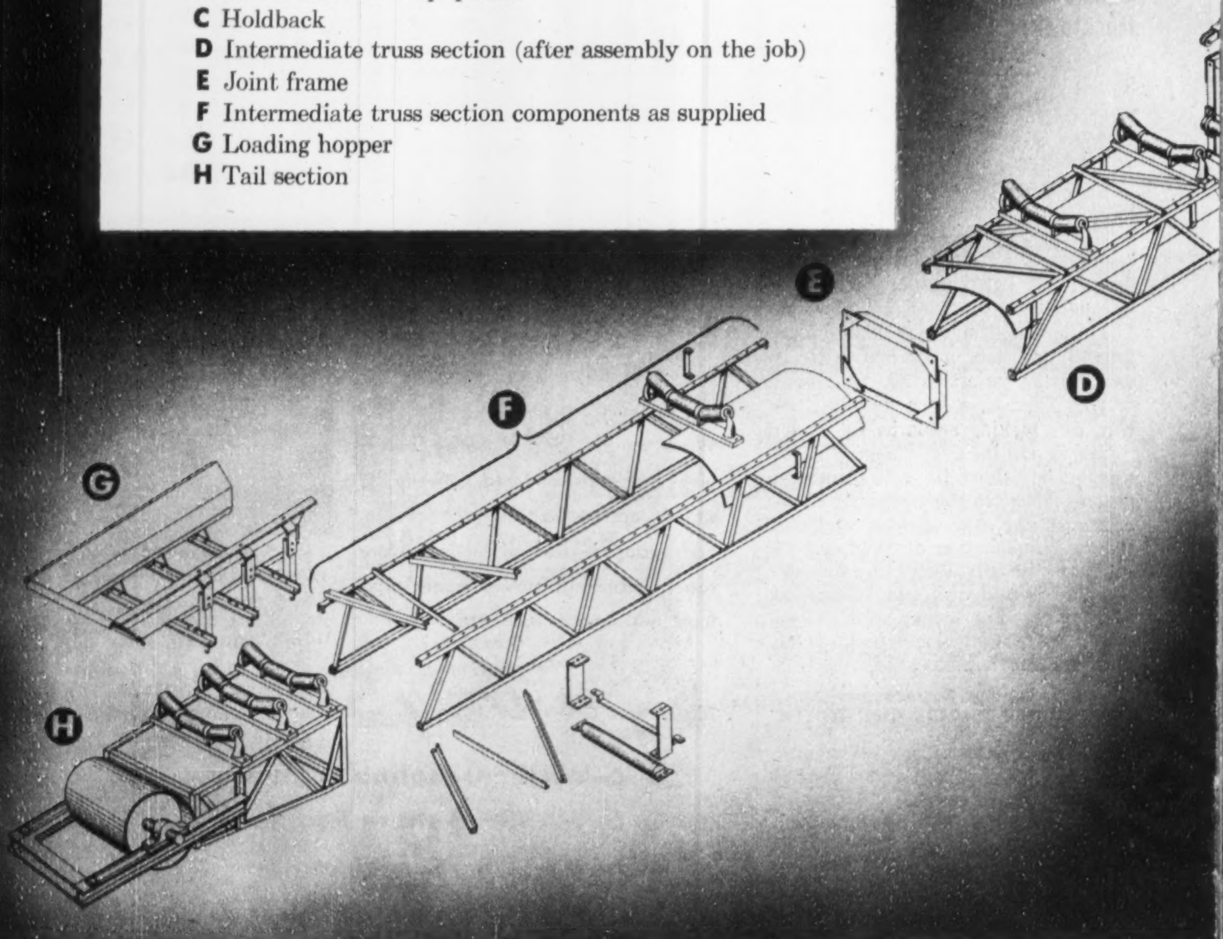
**H** Tail section



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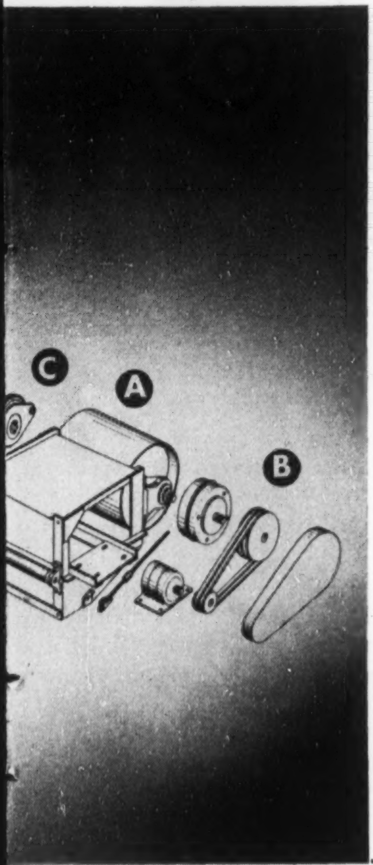

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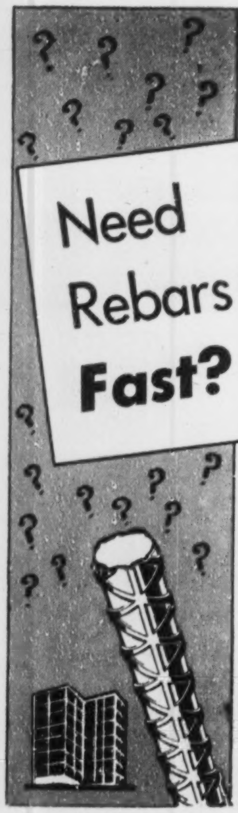

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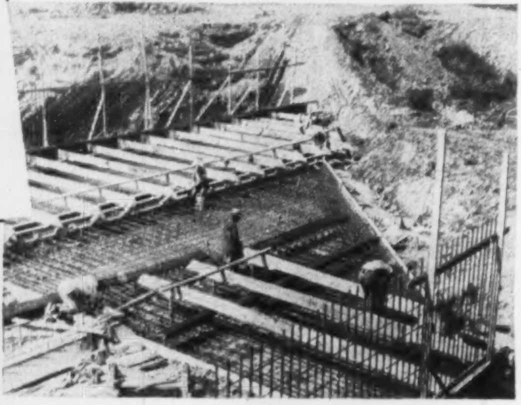

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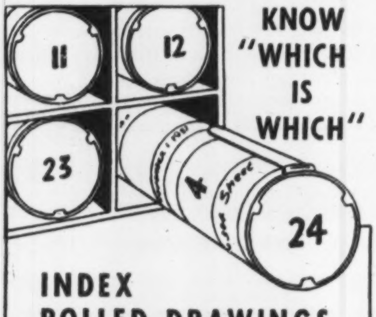

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The former was developed by North American Aviation, Inc., and the latter by Aetco Co.

## Municipal briefs . . .

- **Sewer charge up?**—In an effort to raise $1.4 million annually for capital with which to carry on its construction program, Louisville, Ky., is considering a 50% boost in sewer service charges. An alternate proposal is for increasing the drainage charge.

- **Enabling law for airports**—A bill was enacted by the Texas legislature to permit cities of over 300,000 population to issue revenue and refunding bonds for airport improvements. Sought by Dallas, the measure also will apply to Houston, San Antonio and Fort Worth.

- **Disposal financing studied**—Seattle, Wash., is considering financing its 10-year, $25-million city-wide sewage disposal program through the issuance of revenue bonds retired through levy of sewer service charges.

- **Sanitary division gets teeth**—A bill empowering the Rhode Island State Division of Sanitary Engineering to prosecute, before an act of pollution occurs, any person, firm or ship owner who fails to observe sanitary laws, has been passed by the state senate and sent to Governor D. J. Roberts for signature. Formerly, the division could prosecute only after the act of pollution.

- **Accident rate down**—Engineers from the California State Division of Highways believe that the new Oceanside-Carlsbad Freeway is the reason for a 50% drop in ambulance traffic cases during the 90-day period after the highway's opening. Police substantiated the hospital's report. They claim a 58% reduction in auto accidents within the Oceanside city limits.

- **Soft shoulders: hard riding**—Arizona's highway department is experimenting with painted shoulder stripes in an attempt to keep motorists on the road. The test area is located on a 15-mile stretch of highway U. S. 89, north of Nogales, Ariz.

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**SCHRAMM**
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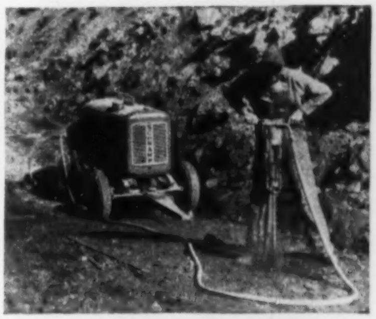
equipped with Back Hoe and Front End Loader, recommended for operating a complete assortment of construction tools.



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125 4-wheel trailer type operating 55# drill for drilling holes in the bottom of cut for dynamite blasting.

the **Pneumapower** engine driven compressor is a compact package with a decided weight advantage. Skidded, this outfit can be placed in any position on a truck, leaving plenty of space for equipment and maintenance crews. Also available for two wheel mounting. *A Schramm exclusive!*

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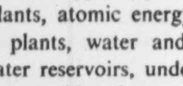

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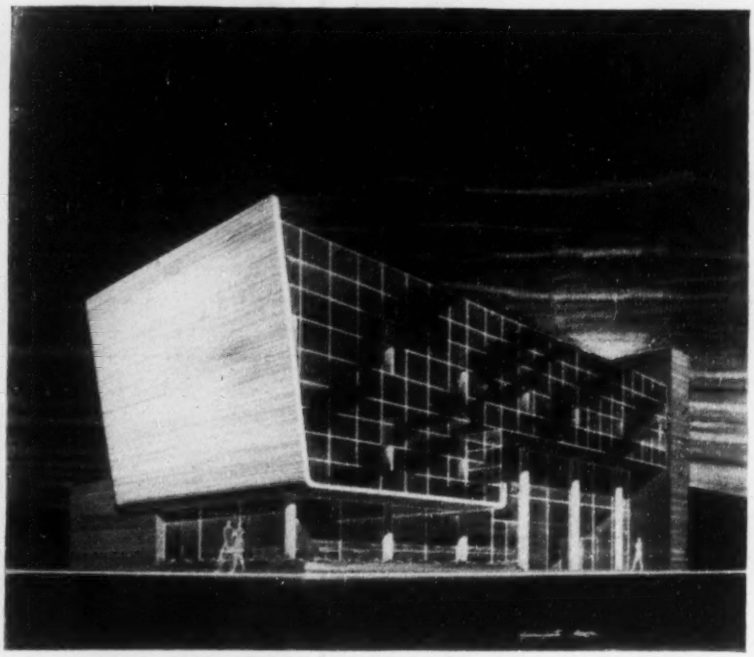


BANCO GENERAL DE MONTERREY, Mexico, will feature glass and a tilted, concrete end-wall.

# U.S. firm finds fertile field in bank building in Latin America

With a contract to build a bank at Chihuahua, Mexico, four years ago, the Bank Building & Equipment Corp. of America, a St. Louis, Mo., concern, entered the profitable market of building banks in Latin America. At present the company has ten projects in the works, six of them under construction, representing an estimated $20 million worth of business.

Established in 1912, the company has constructed 2,500 banks, primarily in the U. S. Current projects in Latin America include three in Mexico, at Monterrey, Tepic and Guadalajara; four in Honduras two at San Pedro Sula and two at Tegucigalpa; and one each at Santa Ana, El Salvador; at Havana, Cuba, and at Quito, Ecuador.

The jobs are planned in St. Louis and to some extent in a branch office in Mexico City.

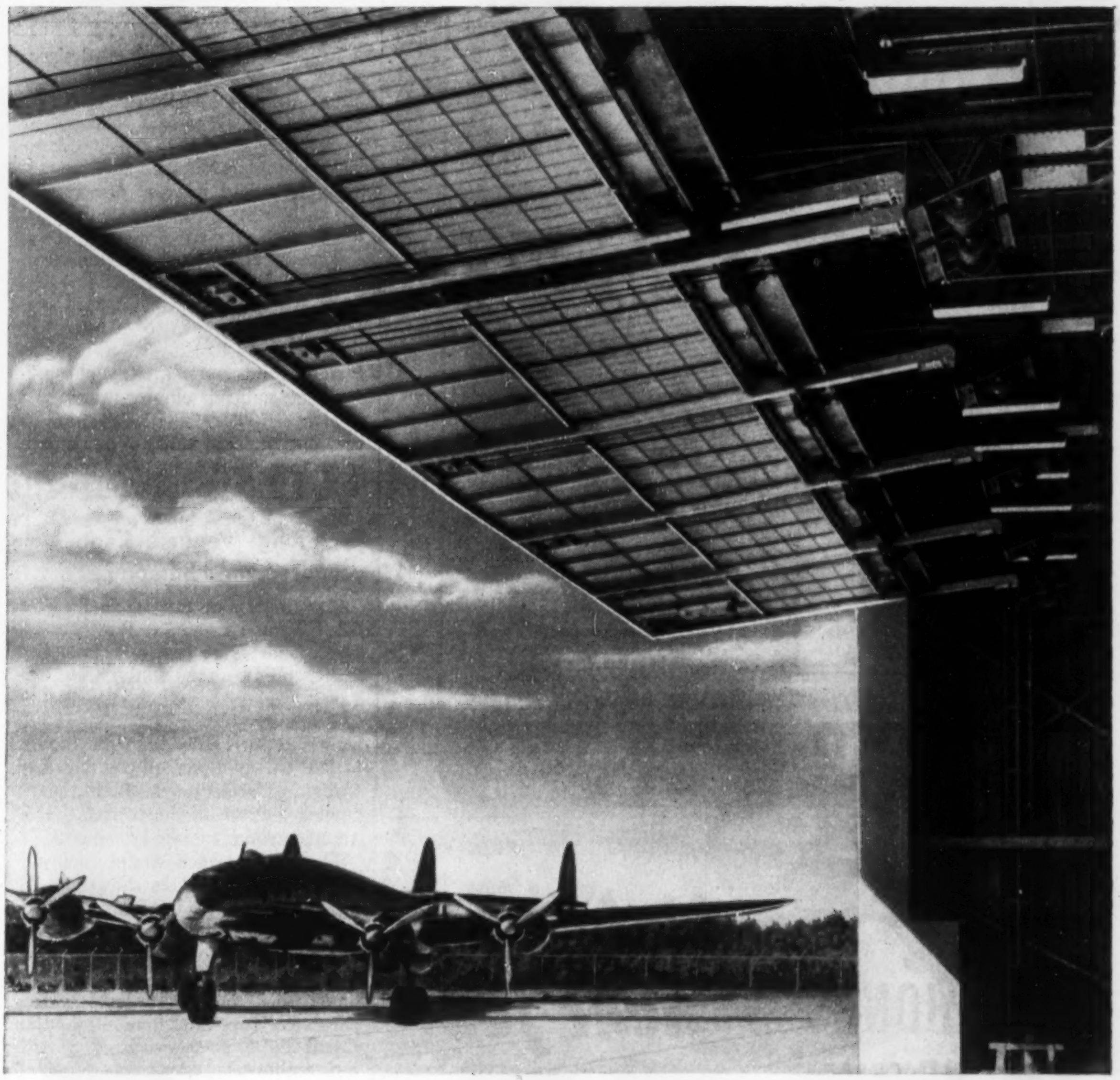
BBEC has 127 men in its architectural department. Vice-President L. J. Orabka says of his company's designs for structures south of the border, "South America is much ahead of the United States in modern architecture. We submit designs down there that we couldn't even show anybody in this country. They are very color-conscious in everything they do.

"We try here to get all kinds of viewpoints in design. One of our leading architects is a Peruvian. We have a Chinese, a German, an Italian, a Czech refugee."

Working drawings are now being completed for the Banco Central del Ecuador, Quito, a $3-million equivalent of the Federal Reserve Bank in this country. The monumental eight-story structure with a total area of 190,000 sq ft will include a laboratory for melting gold, six apartments for bank officials, and even a private steam bath. Since Quito is in an earthquake zone, the bank will be built in sections joined by flexible expansion joints.

Another noteworthy BBEC design is the Banco General de Monterrey, Mexico, which will be an air-conditioned two-story building of glass and reinforced concrete. A mezzanine will cantilever past the street-level column line in the front and the entire outside at one end of the structure will be a concrete slab projecting out and up at an angle to the vertical.

*(Continued on page 62)*



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In spite of the modern designs, BBEC finds that age-old methods often must be employed in Latin America: low rates paid to common labor— fifty cents to a dollar a day—make it uneconomical to ship in such expensive labor-saving devices as power-shovels, and other specialized machinery.

Transportation is another problem. It may take as long as four months to get freight from Guayaquil, Ecuador's main seaport, to Quito, 125 miles away. BBEC Vice-President Orabka points out, "there is one narrow-gage railroad, climbing from sea level to 9,500 ft. The train hauls 40 cars out of Guayaquil to the mountains, then it takes the cars up two at a time."

## 8-mi-long "Panama Canal" proposed for Philippines

Construction of an 8-mi canal across the isthmus of Quezon Province, on Luzon, has been proposed in a bill now pending in the Philippine Congress.

The waterway would be dug 120 ft wide and 30 ft deep from the mouth of the Unisan River on Tayabas Bay to Barrio Plaridel on the Pacific coast, cutting 500 mi off the present 7,335-mi trade route to San Francisco.

Quezon Province would then develop its own overseas shipping port on the Pacific side (along Lamon Bay), so it no longer would have to rely on Manila to handle its produce.

The bill—supported by the Philippine armed forces—also seeks a franchise for a private firm, Philippine Canal Co., to do the work. U. S. military authorities reportedly completed geological and topographical surveys for such a project before World War II, but opposed construction at that time because of the naval use to which an enemy might put the canal.

## Gold Coast builds seaport starting from scratch

In the most ambitious project in its history, the Gold Coast, Africa, a British protectorate, has begun construction on an entire new city and seaport which ultimately will cost around $57 million, including $29 million for the harbor works.

To be called Tema, the town will be built in seven sections, each one to be a self-contained community with its own schools, market, church and recreational facilities. Harbor work will involve construction of two long breakwaters and wharves to handle three ocean-going vessels at a time.

Tema is about 20 miles east of Accra, capital of the Gold Coast. The new port will relieve pressure on Takoradi the only other deep water port on what is rapidly becoming a busy coastline. In the planning stage for the Gold Coast is a huge aluminum industry for which power is to be generated on the Volta River where a vast hydroelectric project is under survey (ENR August 27, 1953 p.58). The mouth of the Volta is about 25 miles east of Tema.

Money for the seaport project is being raised by the Tema Development Corporation.

## International briefs . . .

- **$1-billion for expansion**–American & Foreign Power Co., reportedly the largest single public utility in Central and South America, plans a $1-billion expansion program in Latin America within the next 10 years. Meanwhile, the firm is seeking U. S. tax law changes that would permit the new favored treatment for foreign income of U. S. corporations to apply to income received from a domestically incorporated subsidiary.

- **B. C. rail expansion**–This year British Columbia will start work on a $10-million, 37-mi Pacific Great Eastern rail link between Squamish and North Vancouver. Next year, construction of the $50-million, 250-mi extension between Prince George and Dawson Creek (in the Peace River country) will get under way. Both projects are part of a plan to develop the province's northern and central interior regions by discarding and replacing uneconomical and antiquated barge systems.

- **Tropical tire plant**–A modern plant designed especially for high speed production of tires and tubes in a tropical climate will be built on a 50-acre site in Guacara, Venezuela, by the Venezuela subsidiary of U. S. Rubber Co. One feature: walls permanently opened to the weather to promote circulation of air through the plant. Production is expected to be under way by fall, 1955.

- **Downtown helicopter base**–Three blocks from the heart of Bogota, an $80,000 helicopter base with a 100-ft runway is being prepared on the roof of the building housing Colombia's Ministry of Public Health. A fleet of helicopters–already purchased by the Ministry–will be used to rush emergency medical equipment to any spot in the country when needed.

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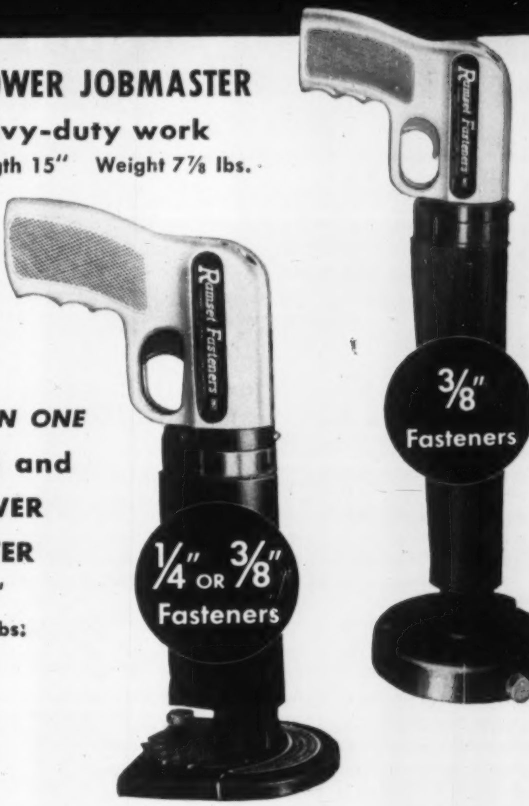

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# OBITUARIES

**Walter H. Root,** 65, deputy chief engineer of the Iowa State Highway Commission, died April 27, in Ames, Ia. Root, who joined the commission in 1912, had been maintenance engineer for 35 years until named to the position of deputy chief last March. He also had been made chairman of the National Highway Research Board in Washington, D. C., last January and was chairman of the Iowa Highway Research Board.

**Grady Lee Bain,** 63, Greensboro, N. C., civil engineer, died April 30. He got his civil engineering degree from North Carolina State College in 1913 and from 1915 until 1935 practiced civil engineering in Greensboro. In August, 1935, he began working with the Department of Agriculture as chief engineer of the seven southeastern states continuing until 1941. Later he became chief of operations of the district of the Corps of Engineers at Savannah, Ga., and subsequently was head engineer of Clark Hill Dam.

**David W. Holloway,** 62, for more than 20 years a civil engineer for Cuyahoga County, Ohio, died in Cleveland April 27. A graduate of Rose Polytechnic Institute, he served in the Corps of Engineers in World War I.

**Harold E. Smith,** 64, president of T. L. Smith Co., Milwaukee manufacturer of concrete mixers, died April 20 in Paris, France. He was a 1913 graduate of the University of Wisconsin.

**Frederick Curtis Clarke,** former secretary and director of the Montreal Engineering Co. Ltd., Montreal, Que., died April 26. He had a lengthy career with major industrial and public service companies in Canada, Trinidad and Puerto Rico.

**Edward J. Finn,** 61, civil engineer, died April 28 in Indiana, Pa. He was with M. Bennett & Sons, contractors. He formerly was district engineer of the Pennsylvania State Highway Department in several communities.

**Donald Y. Geddes,** 68, civil engineer who retired in 1949 as assistant to the general manager of the Pennsylvania R.R., died in St. Petersburg, Fla., May 3. He was a 1907 graduate of Ohio State University. From 1928 to 1942 he was superintendent of the Pennsylvania's New York division at Jersey City, N. J.

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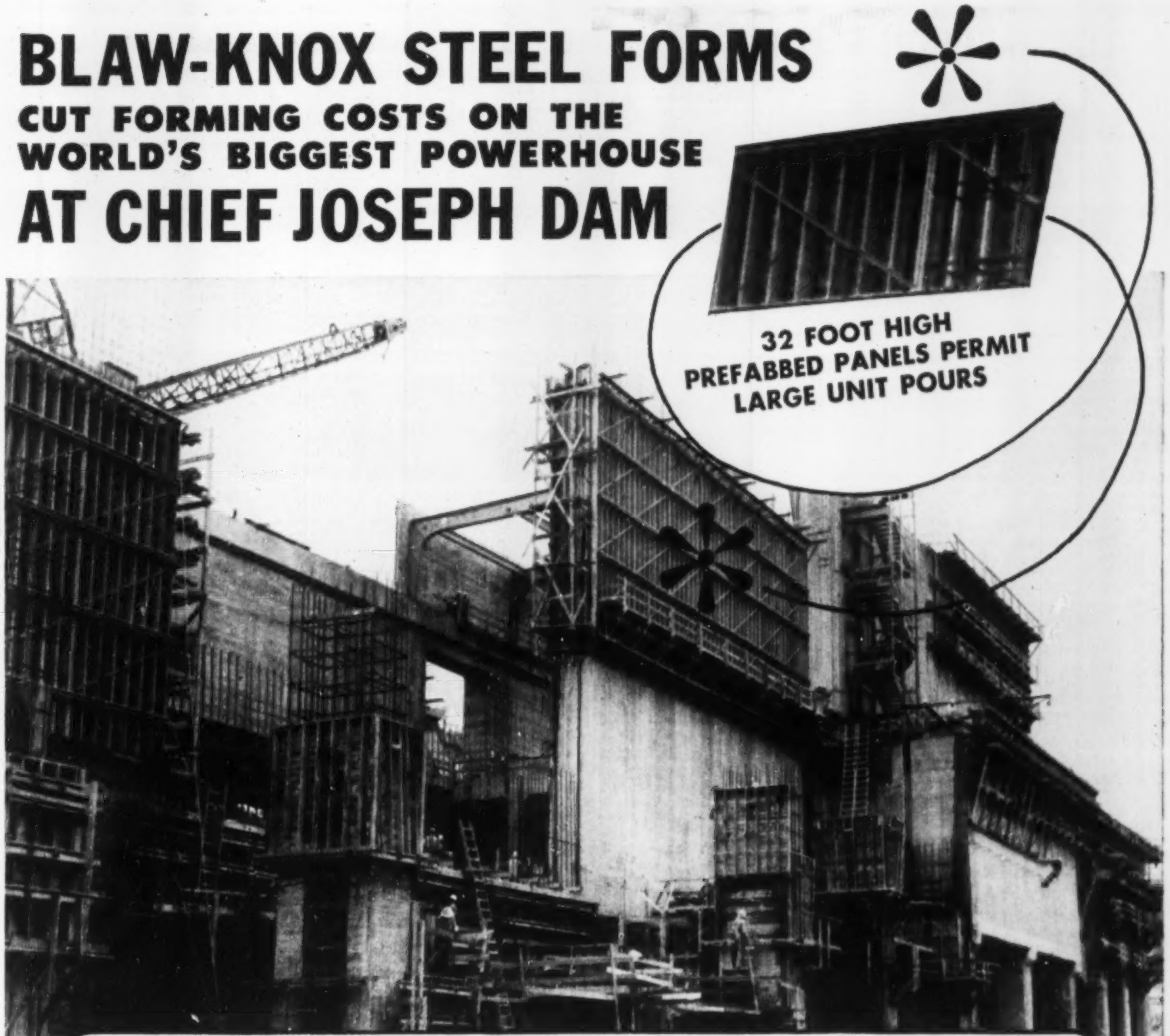
## CUT FORMING COSTS ON THE WORLD'S BIGGEST POWERHOUSE
# AT CHIEF JOSEPH DAM



● Efficient forming methods on the Chief Joseph powerhouse are stepping up the concrete pouring pace from the scheduled 30,000-cu. yds. placed a month to 50,000-cu. yds. in that time to put the job 7% ahead of schedule! Pouring costs have been reduced by improved forming methods, including the use of Blaw-Knox steel panels 32 feet high which permit pours up to 70-ft. long in some of the massive solid walls. By re-using these forms, 80% of the concrete will be formed against the prefabbed panels.

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# CONSTRUCTION REPORTS

## Bids Asked—Low Bidders—Contracts Awarded—First Section—

*Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager*
*J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M E SCIORRA, F S. DEMBEK, Reports.*
*J. H. WEBBER, M R. ROESSLER, E R. HUBER, Statistics.*

### NEW ENGLAND

#### BIDS ASKED—BUILDINGS

**Mass., Newton**—DORMITORY—B.A. 5/18—Andover Newton Theological School, 210 Herrick Rd. (selected list bidders), dormitory, Herrick Rd. $300,000. Perry, Shaw & Hepburn, and Kehoe & Dean, 31 St. James Ave., Boston, archts. CD 2/9.

▲ **Me., Augusta**—OFFICE—B.A. 5/19—State, Dpt. P. Bldgs., State House, Augusta, state office bldg., Capitol and Jackson Sts. $3,000,000. Plans deposit $50, refundable $35. Miller & Beal, Inc., 465 Congress St., Portland, archt. Desmond & Lord, 6 Beacon St., Boston, Mass., assoc. archts. CD 10/30.

▲ **Mass., Agawam**—SCHOOL—B.A. 5/27—Town, Supt. Schools, 100 Main St., High School, De Logia Tract. $2,000,000. Plans deposit $100. Alderman & MacNeish, 594 Riverdale Rd., West Springfield, archts. CD 4/6/54.

▲ **R. I., Newport**—WAREHOUSE, etc. B.A. 6/8—P. Wks. Office, 495 Summer St., Boston, Mass., 1 story, 200x810 ft. steel, concrete warehouse, platforms, 101x302 ft., steel trusses, concrete, transit shed, continuous skylights, site development, remove bldgs., heating, plumbling, electric, sprinklers, sewers, water, etc. $2,240,000. Plans deposit $10. Cull & Robinson, 385 Benefit St., Providence, archts. CD 12/30.

#### SOON LETS CONTRACT—BUILDINGS

**Mass., Attleboro**—PLANT—L. G. Balfour Co., 25 County St., soon lets contract mfg. plant. $380,000. F. P. Sheldon & Sons, 1009 Hospital Trust Bldg., Providence, R. I., engrs. CD 4/26.

#### HEAVY CONSTRUCTION

##### LOW BIDS AND CONTRACTS

▲ **MAINE**—Maine Turnpike Auth., 17 Bishop St., Portland,

**Nello L. Teer**, Durham, N. C. CA Alt. B **$4,721,799,** est. $5,000,000. Contr. 203, Sect. 2 grading, drainage, bridges, Falmouth, South Portland and Portland. CD 4/27, under LB.

▲† **John A. Volpe Constr. Co.**, 54 Eastern Ave., Malden, Mass. CA **$1,069,145,** est. $1,500,000. air national guard facilities, Dow Air Force Base, ENG-19-016-54-91, BANGOR, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 4/20, under LB.

▲ **Morrison-Knudsen Co., Inc., C. J. Maney Co., Inc. & Peter Kiewit Sons' Co.**, 122 E. 42 St., New York, N. Y., CA, **$11,875,062,** Contract No. 210, drainage tunnel, Ward St. Pumping Station to Deer Island, Roxbury and Boston, BOSTON, MASS. Commonwealth of Mass., Metropolitan District Comn., Constr. Div., 20 Somerset St., Boston, Mass. Bids Apr. 8. CD 4/13, under LB.

† **Frankini Constr. Co., Inc.**, 26 Mystic Ave., Medford, Mass. LB **$814,726.** est. $750,000-$1,250,000. central high pressure hot water plant, distr. sys., Westover Air Force Base ENG-19-016-54-88, CHICOPEE FALLS, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 27. CD 4/20.

#### BUILDINGS

##### LOW BIDS AND CONTRACTS

**Donald D. Snyder & Son, Inc.**, 36 Comee St., Gardner, Mass., CA **$556,000,** est. $500,000. elementary SCHOOL, Park and School Sts., BENNINGTON, VT. Bennington School Dist., Allan J. Heath, supt., 205 South St., Bennington, Vt. Bids Apr. 20. CD 4/27, under LB.

**John F. Griffin Co.**, 34 Regent St., Cambridge, Mass. CA Est. **$300,000.** CONVENT, Appleton St., ARLINGTON HEIGHTS, MASS. St. James the Apostle, Rev. George S. Brennan, pastor, Chancery Office, 1 Lake St., Brighton, Mass. Bids Apr. 21. CD 4/12.

**M. Spinelli & Sons, Inc.**, 25 Moulton St., Cambridge, Mass. CA **$617,808.** U-101 Contr. 2 completion ENGINEERING BLDG. University of Mass., AMHERST, MASS. State, University of Mass., Office Treasurer, K. W. Johnson, Amherst, Mass. CD 4/14, under LB.

▲ **DeVries Constr. Co., Inc.**, 72 Albion St., Wakefield, Mass. Owner Builds. **$3,000,000.** 200 RESIDENTIAL DEVELOPMENT, LEXINGTON, MASS.

▲ **George A. Fuller**, 597 Madison Ave., New York, N. Y. CA Est. **$2,500,000.** OFFICE, NORWOOD, MASS. Factory Mutual Engineering Co., Norwood, Mass. Bids Mar. 9. CD 2/24.

**B. F. Poriss**, 1021 Asylum Ave., Hartford, Conn., CA, **$748,500,** Proj. B/A-X-55, HOY PATIENT Bldg. State Training School and Hospital, MANSFIELD, CONN. State, P. Wks. Comn., State Office Bldg., Hartford, Conn. Bids Mar. 24. CD 3/30, under LB.

▲ **Paul P. Zink**, 63 East Main St., Plainville, Conn. Owner Builds. **$1,250,000.** 100 RESIDENCES, PLAINVILLE, CONN.

**M. M. Belding**, Vernon, Conn. Owner Builds. **$335,000.** RESIDENCES, Tomasack Hills Tract, Baker Rd., VERNON, CONN. David C. Barker, 50 State St., Hartford, archt.

### MIDDLE ATLANTIC

#### BIDS ASKED—HEAVY CONSTRUCTION

† **Pa., Pittsburgh**—QUARTERS—B.A. On Or About 6/9—U. S. Eng., 121 N. Broad St., Phila., Zone 1, 2 story, 34x153 ft. wood frame bachelor officers' quarters bldg.; site imprvs., incl. bit. paved parking area and walks; guard fence, storm culverts, site grading and relocation, main and water meter vault, Greater Pittsburgh Air Force Base, Coraopolis, approx. 12 mi. west of Pittsburgh. Inv. No. ENG-36-109-54-325. CD 5/27/52.

#### BIDS ASKED—BUILDINGS

▲ **Pa., Phila.**—HOME FOR AGED—B.A. About 5/28—Dpt. Procurement, City Hall Annex, Phila., constr. buildings incl. 8 cottage type bldgs., one community bldg. at "Riverview" Home for the Aged. $1,000,000-$2,000,000. CD 4/29.

#### HEAVY CONSTRUCTION

##### LOW BIDS AND CONTRACTS

**Peter W. Kero, Inc.**, 615 Newark Ave., Lyndhurst, N. J., LB **$206,234,** excavation for administration bldg., Contr. LT-160.045, Lincoln Tunnel Third Tube, NEW YORK-NEW JERSEY. The Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids Apr. 27. CD 4/5.

▲ **Ranes Constr. Co.**, 151 Montague St., Brooklyn 2, N. Y. LB **$1,269,910,** constr. Hangar No. 11, New York International Airport, incl. paving, utilities, Contr. NYA-363-002, IDLEWILD, N. Y. The Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids Apr. 30. CD 4/2.

▲ **NEW JERSEY**—New Jersey Hy. Auth., State Hy. Office Bldg. 1035 Parkway Ave., Trenton,

**Union Bldg. & Constr. Corp.**, 631 Main Ave., Passaic, N. J. CA, **$2,703,614,** Contract No. 47, 1.7 mi. Garden State Parkway from west Hazel St. to Lexington Ave., Clifton, Passaic Co. Bids Mar. 15, awarded Apr. 29. CD 3/30, under LB.

**Feinberg & Son**, P. O. Box 197, Lakewood, N. J., CA, **$250,000,** 2 swimming pools, indoor and outdoor, hotel addn. and 65 cabanas, ATLANTIC CITY, N. J. Hotel Traymore, Illinois Ave. and Boardwalk, Atlantic City, N. J. Juster & Juster, 366 Broadway, New York, N. Y., archts.

**PENNSYLVANIA**—State Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,

**Eichleay Corp.**, 33 S. 19 St., Pittsburgh 3, Pa., CA **$559,581,** partial constr. of downtown interchange of Penn-Lincoln Parkway, opposite west-bound parkway, incl. reconstr. Pennsylvania R.R. bridge over B. & O. R.R., incl. removal of 5 girder spans of the existing bridge, replacing portions removed with 3 girder spans, incl. 2 concrete piers and modification existing span over First Ave., 0.08 mi. U.S. Rtes. 22 and 30, in city of Pittsburgh, Allegheny Co. Bids Apr. 15. CD 4/20, under LB.

**PROJECTS COVERED**

***Projects—By Size***

**Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.**

***Classes of Construction***

**(Name in order of Listing)**

**Water Supply**
**Sewers, Waste Disposal**
**Bridges**
**Streets & Roads**
**Earthwork, Waterways**
**Latin America**
**Public Buildings**
**Commercial Buildings**
**Industrial Buildings**
**Unclassified**

***Stages Reported***

**PROPOSED WORK: Including appointment of engineers or architects.**

**BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.**

**LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.**

**CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.**

**Dates shown are of issue in which last previous report was published.**

***Symbols and Abbreviations Include:***

| | |
|---|---|
| **†** | **Federal Government** |
| **▲** | **Project of $1,000,000 or over.** |
| **B.A.** | **Bids Asked** |
| **ENR** | **Engineering News-Record** |
| **CD** | **Engineering News-Record Construction Daily** |

† **Samuel Zarpas**, 514 Rhode Island Ave. N.E., Wash., D. C. LB **$341,334.** Bid 1 and 2. $16,000. Alt. A. addn., Battery No. 8 launching and control area, vicinity of Pomonkey, ENG-49-080-54-53-(45), MARYLAND. U. S. Eng., First and Douglas Sts. N.W., Wash., D. C. Bid Apr. 27. CD 4/8.

† **Irons & Reynolds Co.**, 1701 H St. N.W., Wash., D. C. CA **$614,838.** Base Bids 1, 2 and 3, hangar, motor service shop, road exten., paint, oil, dope storage at ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N.W., Wash., D. C. Bids Apr. 20, awarded Apr. 29. CD 4/28.

#### BUILDINGS

##### LOW BIDS AND CONTRACTS

▲ **Briar Point Homes**, c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. **$1,500,000.** 138 HOUSES, 45-acre tract, Brooks and Cummings Aves., BAY SHORE, N. Y.

▲ **Bay Green Homes**, c/o Albert B. Meklenburg Organization, Inc., 1038 Northern Blvd., Roslyn, N. Y. Owner Builds. **$7,000,000.** 450 HOUSES, tract on Merrick Rd., east of Hicksville Rd., MASSAPEQUA, N. Y.

▲ **Elmwood Gardens Homes**, c/o Long Island Homes, 168-12 Hillside Ave., Jamaica 32, N. Y. Owner Builds. **$1,350,000.** 115 HOUSES, Sunrise Hy. east of Park Blvd., MASSAPEQUA PARK, N. Y.

▲ **North Woodmere Knolls Homes**, c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. **$1,200,000.** 56 HOUSES, Brookfield Rd. near Mill Rd., NORTH WOODMERE, N. Y.

▲ **Cedar Falls Manor Homes**, c/o Erwin Gerber & A. Pancani, Jr., archts., 1180 Raymond Blvd., Newark, N. J. Owner Builds, **$2,000,000,** 152 HOUSES on tract on both sides of Montclair Ave. near Route 23, CEDAR GROVE-LITTLE FALLS, N. J.

**Belli Co., Inc.**, 2127 Hamilton Ave., Trenton, N. J. LB, **$899,000,** general construction Elementary-Junior HIGH SCHOOL, Ewingville and Lower Ferry Roads, Ewing Twp., TRENTON, N. J. Bd. Educ., Parkway Ave., Trenton, N. J. Bids Apr. 26. CD 4/2.

▲ **Moyer Bros.**, 2605 Beale Ave., Altoona, Pa., LB **$1,311,000,** general constr. Secondary SCHOOL Bldg. for Clearfield area Joint School Bd., Lawrence Twp., CLEARFIELD, PA. State Public School Building Auth., 101 S. 25 St., Harrisburg, Pa. Bids Apr. 29. CD 3/24.

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York 17, N. Y., CA. Approx. **$4,500,000.** remodeling department STORE, 12 and Market Sts., PHILA., PA. Snellenburgs Department Store, Market St., Phila., Pa. Thalheimer & Weitz, 1315 Walnut St., Phila., Pa., archts.

▲ **Marvin Dekelboum Co.**, Southern Bldg., Wash., D. C. CA Est. **$1,000,000.** 55 brick, HOME Subdivision Maplewood, BETHESDA, MD. Kay-De Manor, Inc., Southern Bldg., Wash., D. C. Daumit & Sargeant, 145 Kennedy St. N.W., Wash., D. C., archts.

### SOUTH

#### BIDS ASKED—HEAVY CONSTRUCTION

▲† **Virginia**—B.A. 6/22—U. S. Eng., foot of Front St., Norfolk, Craney Island Disposal Area, hydraulic filled dike 30,000 ft. long, 18 ft. high, dredging and placing approx. 7,670 cu. yd. material, 184,000 tons rip rap, sluiceways, bridges, paving, etc. near Norfolk, Norfolk Co. $8,000,000. CD 4/19.

#### BIDS ASKED—BUILDINGS

**W. Va., Romney**—DORMITORY, etc.—B.A. 5/19—W. Va. Bd. Educ., Capitol Bldg., Charleston, dormitory and infirmary at W. Va. School for the Deaf and Blind, $400,000. Alex B. Mahood, Law & Commerce Bldg., Bluefield, archt. CD 7/20.

**Fla., Miami**—MEDICAL SCIENCE—B.A. 5/25—Dade Co., Court House, medical science bldg. at Jackson Memorial Hospital, $500,000. Steward & Skinner, 223 S.E. 1 St., archts. CD 12/21.

**Va., Fairfax**—SCHOOL—B.A. 5/27—Fairfax Co. School Bd., Fairfax, 1 story, masonry Holland Hills Elementary School, near Alexandria, $400,000. Hayes, Seay, Mattern & Mattern, 609 S. Jefferson St., Roanoke, archts. CD 11/9.

▲ **Va., Lynchburg**—HOSPITAL—B.A. 6/8—Lynchburg Hospital Auth., Lynchburg, 200-bed Lynchburg General Hospital. $3,500,000. Samuel Hannaford & Sons, 1024 Dixie Terminal Bldg., Cincinnati, O., archts. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, engrs. CD 11/28/52.

**Fla., Gainesville**—AGRICULTURE—B.A. 6/15—State Bd. Control, Educ. Bldg., Florida State University Tallahassee, main agriculture bldg., University of Florida, $800,000. Plans deposit $25. W. Kenyon Drake &

(Continued on page 68)

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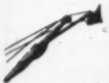
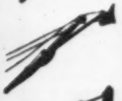


- **1¼ yd. STANDARD SHOVEL with 22½' boom, 16' sticks.**



- **HIGH LIFT 1¼ yd. SHOVEL with 26' boom, 18' sticks.**

- **TRENCH HOE with 22' boom, 12' stick, and 1¼ yd. capacity.**

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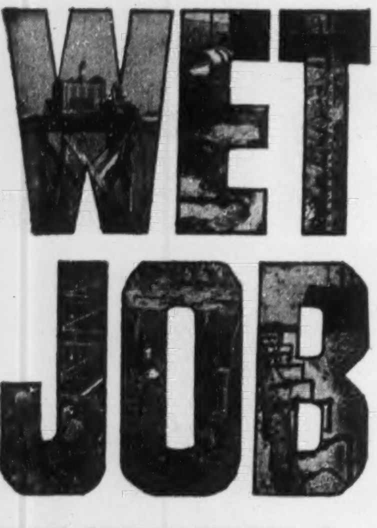

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(Continued from page 66)

Assoc., 218 W. Church St., Jacksonville, archts. CD 7/30.

**Fla., Tallahassee**—GYMNASIUM—B.A. 6/15—State Bd. Control, Education Bldg., men's gymnasium Florida State University, $500,000. Plans deposit $25. William B. Harvard, 2714 Ninth St. N., St. Petersburg, archt. CD 7/30.

## HEAVY CONSTRUCTION

### LOW BIDS AND CONTRACTS

▲ **H. C. Price Co.**, Bartlesville, Okla., CA, **$6,683,000** 58 mi. 30 in. welded joint gas line Ceredo to Lanham compressor station, Cabell, Putnam and Kanawha Counties, WEST VIRGINIA United Fuel Gas Co., 1033 Quarrier St., Charleston, W. Va. CD 4/27/51.

▲ **MISSISSIPPI**—State Hy. Dpt., T. C. Robbins, dir., Jackson,

**Pigford Bros. Constr. Co.**, Hy 11 S, Meridian, Miss. CA **$578,762**, est. $700,000. grade, drain, bridges 1.181 mi. U. S. Hy. No. 80 between Bovina and Bolton, Hy. Proj. FI 004-1 (15), Warren and Hinds Counties;

**Cook Constr. Co.**, Hy. 80 W, Jackson, Miss. CA **$563,139**; est. $600,000. grade, drain, culverts, box bridges 23.698 mi. Miss. Hy. No. 26 between Poplarville and Wiggins, Hy. Proj. F 028-1 (3), Pearl River and Stone Counties;

**O. J. Stanton & Co.**, Greenwood, Miss. CA **$295,273**; est. $295,000. grade, drain, culverts, box bridges 11.179 mi. Miss. Hy. No. 12 between Sunflower River and Belzoni, Hy. Proj. S 0627 (2) A, Humphreys Co.;

**Phillips Concrete Products Co.**, Columbus, Miss. CA **$133,059**, est. $137,000. base, double bit. surf. tr. 7.406 mi. Miss. Hy. No. 10 between Miss. Hy. No. 15 and Pheba, Hy. Proj. S 0740 (2) A, Webster and Clay Counties;

**Boyd Constr. Co.**, Grenda, Miss. CA **$138,439**. grade, drain, culverts, box bridge; bridge 7.079 mi. Miss. Hy. No. 4 between Evansville and Savage, Hy. Proj. S 0901 (1) A, Tunica Co. Grand total $1,708,672. Bids Apr. 27. CD 4/16.

## BUILDINGS

### LOW BIDS AND CONTRACTS

▲ **J. W. Bateson Co., Inc.**, Irwin-Keasler Bldg., Dallas, Tex., LB, **$1,728,870** HOUSING units, 286-dwellings, GA-3-3 and GA 3-4, ATHENS, GA. Housing Auth., Broad St., Athens, Ga. Bids Apr. 22. CD 3/23.

**Rood Constr. Corp.**, 4217 Ponce De Leon Blvd., Coral Gables, Fla., Force Account, **$382,000**, 48 RESIDENCES, CORAL GABLES, FLA.

▲ **Coogan & Beatty**, 1537 N. W. 15 Ave., Fort Lauderdale, Fla., Force Account, **$1,000,000**. 111 RESIDENCES, FORT LAUDERDALE, FLA.

▲ **Gust K. Newberg Constr. Co.**, 99 N. E. 71 St., Miami, Fla., LB, **$2,127,000**. HOSPITAL, FORT LAUDERDALE, FLA. Diocese of St. Augustine, St. Augustine, Fla. Bids Apr. 12. CD 3/24.

**C. A. Fielland, Inc.**, 107 N. Rome Ave., Tampa, Fla., CA, **$519,232**, WARD bldgs., utilities at Florida Farm Colony, GAINESVILLE, FLA. State Imprvt. Comn., Caldwell Bldg., Tallahassee, Fla. Bids Feb. 24. CD 2/16.

**Jones-Mahoney**, 1542 Fuller St., Tampa, Fla., CA, **$304,602**, CHURCH, LAKELAND, FLA. First Methodist Church, 72 Lake Morton Dr., Lakeland, Fla.

▲ **Lake Blue Estates**, 214 Alhambra Circle, Coral Gables, Fla., Force Account, **$1,000,000**, 132 RESIDENCES, LAKE PLACID, FLA.

**Blue Ribbon Constr. Co.**, 3333 Palm Ave., Hialeah, Fla., Force Account, **$500,000**. 75 RESIDENCES, MIAMI, FLA.

**Jones-Frederick & Assocs.**, 3501 N. W. 58 St., Miami, Fla., Force Account, **$350,000**, SHOPPING CENTER, MIAMI, FLA.

**Ray M. Lee Co.**, P.O. Box 4665, Atlanta, Ga., CA, **$661,155**, HOSPITAL, OCALA, FLA. Monroe Memorial Hospital Bd., Ocala, Fla. Bids Mar. 15. CD 3/23, under LB.

**A. W. Smith**, 404 S. 12 St., Leesburg, Fla., CA, **$300,448**. Dream Lake Elementary SCHOOL, Apopka, ORLANDO, FLA. Orange Co. Bd. P. Instruction, Orlando, Fla. Bids Apr. 12. CD 3/23.

**Max Ferran**, 8007 Panola St., New Orleans, La. Force Account. **$400,000**. 44 RESIDENCES, NEW ORLEANS, LA.

**Louisville Gas & Electric Co.**, Chestnut St., Louisville, Ky. Owner Builds. **$400,000**. 6 story, rein.-con. OFFICE addn., LOUISVILLE, KY.

**Virginia Eng. Co.**, 24 St. and James River, Newport News, Va. LB, **$913,000**. rein.-con., masonry WAREHOUSE, Crittenden Dr., LOUISVILLE, KY. Kroger Co., 1240 State St., Cincinnati, O. Bids Apr. 23. CD 3/25.

▲ **Turner Constr. Co.**, **Struck Constr. Co.**, Beuchel Bank Rd., Louisville, Ky. CA Est. **$3,000,000**. BUILDING No. 10, Beuchel, LOUISVILLE, Ky. General Electric Co., Appliance Park, Louisville, Ky. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., engr.-archt. F. A. Fairbrother & Geo. Miehls, 345 New Center Bldg., Detroit, Mich., engrs. CD 5/23/51.

# MIDDLE WEST

### BIDS ASKED—HEAVY CONSTRUCTION

† **O., Youngstown**—FLIGHT SIMULATOR—B.A. 5/18—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., flight simulator addn., Youngstown Municipal Airport, Serial No. ENG-46-022-54-22. CD 4/21.

### BIDS ASKED—BUILDINGS

▲† **Mich., Detroit**—LABORATORY—B.A. 5/18—U. S. Eng., 1900 Cadillac Tower, 164x283 ft., rein.-con., steel T-shaped automotive components laboratory, 8 engine test cells, 2 transmission test cells of controlled high temperature vehicular test cell being rein.-con. circular in shape approx. 162 in. diam., having a circular vehicular test cell 80 ft. diam. for Detroit Arsenal, Centerline, ENG-20-064-54-37. $7,000,000. CD 4/20/53.

## HEAVY CONSTRUCTION

### LOW BIDS AND CONTRACTS

**INDIANA**—State Hy. Comn., State House Annex, Indianapolis.

**Wayne Paving Co.**, 1935 Lincoln Bank Tower, Fort Wayne, Ind., LB, **$201,273**, est. $206,092, c. conc. 0.445 mi. and b.conc. resurf. 7.88 mi. U. S. Rd. 20, Angola, Steuben Co.;

**Grady Asphalt, Inc.**, 6101 College Ave., Indianapolis, Ind., LB, **$225,831**, est. $299,182. 6.825 mi. E. of Stilesville, Putnam and Hendrick Counties;

**John R. Jurgenses**, Newton, O., LB, **$107,791**, est. $149,311, 7.503 mi. E. of Stilesville, Hendricks Co.;

**Brooks Constr. Co.**, 1123 Barthold St., Fort Wayne, Ind. LB, **$73,513**, est. $84,077, b.conc. 4.71 mi. U. S. Rd. 30, Rural District, Allen Co.;

**McMahan Constr. Co.**, Rochester, Ind., LB, **$103,940**, est. $110,205, b.conc. 2.77 mi. U. S. Rd. 31 and 24, Peru, Miami Co.;

**McCalman Constr. Co.**, 701 Section St., Danville, Ill., LB ,**$658,174**, c.conc. 7.437 mi. Rd. 105, south of New Goshen, Vigo and Vermillion Counties. Bids Apr. 27. CD 4/21.

▲ **Overland Constr. Co.**, 205 W. Wacker Dr., Chicago 6, Ill., LB, **$1,514,274**, superstructure only for Van Buren St. Bridge over Chicago River, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Apr. 27. CD 3/31.

▲ **Barnes Constr.. Co.**, 1310 Wallen St. S.E., Grand Rapids, Mich., CA, **$1,820,040**, sewage disposal plant and treatment facilities, GRAND RAPIDS, MICH. City, Millard M. Moore, city mgr., Grand Rapids, Mich. Bids Apr. 14. CD 3/19.

## BUILDINGS

### LOW BIDS AND CONTRACTS

▲ **Faxon Realty Co.**, 3601 Bellecrest St., Cincinnati, O., Owner Builds. **$3,000,000**. 196 one-family 1½ story, bsmnt., brick HOMES, Hunt Rd., east of Reading Rd., READING, O. James Wald & Assoc., 1726 Dallas Ave., Cincinnati, O., engrs. **Awarded Apr. 28.**

▲ **Cleveland Constr. Co.**, 3866 Carnegie Ave., Cleveland 15, O., CA **$2,500,000**. 5 story 91-bed rein.-con. psychiatric HOSPITAL, CLEVELAND, O. University Hospitals of Cleveland, 2065 Adelbert Rd., Cleveland 6, O. Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., Cleveland, O. archts. CD 11/25/49.

**Frank Messer & Son**, Paddock Rd., Cincinnati, O., CA, Approx. **$450,000**. 1 story, 13,000 sq. ft. Gerontological LABORATORY, Amity Rd., READING, O. Wm. S. Merrell Co., Amity Rd., Reading, O. CD 12/2.

▲ **Clem B. Mulholland, Inc.**, 2150 West 95 St., Chicago, Ill., Own Forces, **$7,000,000**, 300 HOMES, EVERGREEN PARK, ILL.

▲ **John T. Rule**, Lake Villa, Ill., Own Forces, **$40,000,000**. 2,000 HOMES at Fox Lake, in Chain-O-Lakes Region, (2-3 year program), LAKE VILLA, ILL.

**Chas. D. Smith & Son**, Fond du Lac, Wis., LB, **$306,900**, general contract, 2 grade SCHOOLS, FOND DU LAC, Wis., Bd. Educ., 101 S. Military Rd., Fond du Lac, Wis. Bids Apr. 20. CD 3/24.

▲ **Gilbert Constr. Co.**, 378 Maryland Ave. West, St. Paul, Minn., CA, **$5,000,000** general contract HOUSING and SHOPPING CENTER, incl. 200 dwellings and shopping center and grade and Junior High School, HUDSON, WIS. Hudson Development Co., C. A. Ward, pres., T. Clymer, vice pres., Hudson, Wis.

▲ **Cunningham-Limp Co.**, 3087 W. Grand Blvd., Detroit, Mich. CA **$1,400,000**. 5 story, rein.-con. parking GARAGE, Monroe and Randolph Sts., DETROIT, MICH. Monroe-Randolph Parking, Inc., Foster Winter, pres., J. L. Hudson Co., Randolph and Monroe Sts., Detroit, Mich. Bids Apr. 12. CD 4/2.

▲ **Lloyds Builders of Chicago**, 61 W. Superior St., Chicago, Ill., CA, **$1,892,400**, Mich. 6-1, 236 family units and management and maintenance bldg., Moton Terrace, SAGINAW, MICH. Saginaw Housing Comm., Ave. A and Harold St., Saginaw, Mich. CD 4/15.

# WEST OF MISSISSIPPI

### BIDS ASKED—HEAVY CONSTRUCTION

▲† **Tex., Kelly Air Force Base**—WAREHOUSE, etc.—B.A. 6/10—U. S. Eng., Box 1229, Galveston, Schedule 1, AMC warehouse, 720,000 sq. ft., drilled footings, concrete frame, masonry walls, $3,000,000-$5,500,000; Schedule 2, outside utilities, sewers, water, grading, drainage ditches, paving, gas and electric distr. lines, $475,000. Inv. No. ENG-41-243-34-36. Awards will be made by schedules. CD 4/30.

† **Kan., Topeka**—BUILDINGS—B.A. 7/1—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., Group B bldgs., utilities, maintenance hangar, 139,000 sq. ft. sprinkler sys., storage pumping station, multi-pump docks, eng. mint. bldg., 31,000 sq. ft. central heating plant, distr. sys., 2 storage bldgs., electric distr., water gas, drainage sys., apron, ramps, roads, Forbes Air Force Base, near here, ENG-23-028-54-71. CD 3/2/53, under LB.

#### BIDS ASKED—BUILDINGS

▲ **Colo., Grand Junction**—SCHOOL—B.A. 5/25—School District No. 51, Mesa County, Grand Junction, 1 and 2 story high school. $2,000,000. Atchison & Kloverstrom, 1254 Monaco Parkway, Denver, engrs. and archts. CD 7/23.

▲ **Colo., Denver**—LIBRARY—B.A. 6/9—City, Municipal Bldg., 7 story (2 below ground) granite limestone library. $2,000,000. Ketchum & Konkel, 1090 Fox St., engrs. Fisher & Fisher, Denver National Bank, and Burnham Hoyt, Colorado National Bank Bldg., archts. CD 9/25/47.

#### SOON LETS CONTRACT—BUILDINGS

▲ **Tex., Houston**—BANK, OFFICE, GARAGE—Second National Bank of Houston, 800 Main St., soon lets contract 24 story bsmnt., steel, granite on brick backup exterior walls, bank and office, $4,500,000; parking garage, $500,000. Kenneth Franzheim, 2402 Crawford St., archt. H. E. Bovay, Jr., M. Esperson Bldg., and Reg. F. Taylor, Bankers Mortgage Bldg., and Ward Butterick, 2303 LaBranch St., engrs. CD 4/7.

### HEAVY CONSTRUCTION

#### LOW BIDS AND CONTRACTS

▲ **SOUTH DAKOTA**—State Hy. Comn., Pierre,

**Chase Constr. Co.**, Rapid City, S. D. CA **$66,908,** grav. resurf. 40.658 mi. SAP 3, NRH 345A and 217D, Butte Co.;

**Dave Gustafson & Co., Inc.**, 502 E. 6 St., Sioux Falls, S. D., CA **$338,559,** grading, sub-base, etc. 16.048 mi. FAP 337 (St. Wk.), Lincoln and Union Counties;

**J. L. Healy Constr. Co.**, 301 Western Surety Bldg., Sioux Falls, S. D., CA **$200,012,** base course imprv. and bit. surf. 11.039 mi., F 265 (7) (St. Wk.) Lyman Co.;

**W. Hodgman & Sons,** Fairmont, Minn., CA **$114,418,** base imprv. and bit. surf. 8.952 mi. FAP 78 (5) (St. Wk.), Tripp Co.; CA **$226,983,** pt. base course imprv., pt. base course and bit. surf. 15.762 mi. I 185 (35), FI 185 (31), and FAP 185G (2), Jackson Co.;

**Mauer Constr. Co.**, Sac City, Ia., CA **$202,007,** blotter type bit. surf. 31.8 mi., FAP 251, Perkins Co.; CA $156,290, blotter type bit. surf. 25.383 mi., FAP 333 (pt.), Haakon Co.; CA **$180,073,** blotter type bit. surf. 27.952 mi., FAP 242, Meade Co.;

**Megarry Bros.**, St. Cloud, Minn., CA **$146,338,** bit. surf. (maint. retread type) 21.854 mi., FAP's 16 (pt.). 154 and 141, Hughes Co.;

**Summit Constr. Co.**, Rapid City, S. D., CA **$61,227,** grav. resurf. and stockpiles 36.478 mi. FAS 42, S 72, NRS's 413 and 303, Fall River Co.;

**Tennefos Constr. Co. Inc.**, 1205 S. 9 St., Fargo, N. D. CA **$198,347,** grading, structures, etc. 12.073 mi., four rein.-con. boxes F 208 (5), Roberts Co. Grand total $1,891,162. Bids Apr. 27. CD 4/15.

▲† **Lipsett, Inc.**, 100 Park Ave., New York, N. Y., LB **$1,930,516,** est. $2,448,795, constr. foundations and erecting steel towers for 204 mi. Big Bend-Granite Falls 230 kv transmission line, Missouri River Basin Proj., Spec. DC 4146, SOUTH DAKOTA and MINNESOTA. Bureau Reclamation, Dpt. Interior, Huron, S. D. Bids Apr. 22. CD 3/26.

**Yerington Constr. Co.**, Parkville, Mo. CA **$320,745.** 1,200 ft. earth dam in Cedar Creek to from lake of 140 acres for water supply, OLATHE, KAN. City Comrs., Olathe, Kan. Bids Apr. 26, awarded Apr. 27. CD 4/5.

▲† **Peter Kiewit Sons Co.**, Southeast Station, Wichita, Kan., CA, **$2,101,938,** runway and apron, Smoky Hill Air Force Base, Inv. 23-028-54-54, SALINA, KAN. U. S. Eng., Davidson Bldg., Kansas City, Mo. Bids Apr. 21. CD 4/27, under LB.

▲ **Western Contg. Co.,** 400 Benson Bldg., Sioux City, Ia. LB **$2,731,529,** est. $2,321,329. airfield paving, Forbes Air Force Base, near TOPEKA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Apr. 26. CD 4/22.

▲ **Southwestern Bell Telephone Co.,** 405 N. Broadway, Oklahoma City, Okla. Purchase and Hire. **$1,500,000.** underground telephone cable from El Reno to Lawton, Canadian Co., OKLAHOMA. J. B. Kibler, c/o owner, engr. Awarded Apr. 15.

▲ **Panama-Williams Co.**, Melrose Bldg., Houston, Tex., **W. L. Golightly, Inc.**, 6450 Liberty St., Houston, Tex., and **Associated Pipe Line Contractors, Inc.**, 3272 Westheimer St., Houston, Tex., CA **$5,000,000.** 63 mi. 16 in. gas line from Angleton, Collegeport, Grove areas in Matagorda Co. to control station at Dow's Plant "A" at Freeport, TEXAS. Dow Chemical Co., Freeport, Tex. CD 3/10, under Tex., Freeport.

**Pelphrey-Basham, Inc.**, Box 546, Whitney, Tex., CA **$627,020,** water supply mains, appurtenances, LUBBOCK, TEX. City, Lubbock, Tex. Bids Apr. 22. CD 4/30, under LB.

† **Ace Constr. Co.**, 2110 S. 55 St., Omaha, Neb., LB **$628,950,** runway and taxiway exten., Air National Guard Municipal Airport, Inv. 25-066-54-72, CHEYENNE, WYO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Apr. 26. Bid date was set back to Apr. 26 from May 7. CD 4/6.

† **Haddock-Engineers, Ltd.**, Box 390, Montebello, Calif., LB **$320,313,** est. $300,000 30,000 sq. ft. masonry squadron admin. and supply bldg., for support facilities, Kirtland Air Force Base, Serial No. ENG-29-005-54-95, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Apr. 21. CD 4/8.

### BUILDINGS

#### LOW BIDS AND CONTRACTS

▲ **Kraus-Anderson, Inc.**, 501 S. 8 St., Minneapolis, Minn., CA, **$1,248,767,** State SCHOOL and HOSPITAL addn., CAMBRIDGE, MINN. State Dpt. Admin., 19 State Capitol, St. Paul, Minn. Bids Apr. 15 CD 4/27, under LB.

▲ **Pittsburgh-Des Moines Steel Co.**, 1015 Tuttle St., Des Moines, Ia., Own Forces, **$1,000,000.** 315x630 ft. structural steel and plate steel fabrication PLANT, DES MOINES, IA.

▲ **Mead & Mount Constr. Co.**, Railway Exchange Bldg., Denver, Colo., CA, **$1,017,400,** est. over $300,000 general contract native stone and porcelain enamel exterior, men's DORMITORY, FORT COLLINS, COLO. Colorado A & M College, Fort Collins, Colo. Bids Apr. 27, awarded Apr. 28. CD 4/26.

**Moore Constr. Co.**, Box 300, Austin, Tex., CA **$857,349.** HIGH SCHOOL, REFUGIO, TEX. Refugio Independent School Dist., Refugio, Tex. Bids Apr. 9. (**Correction**—contractor). CD 4/21 under CA.

## FAR WEST

### HEAVY CONSTRUCTION

#### LOW BIDS AND CONTRACTS

**ARIZONA**—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix,

B. L. **Gustafson,** 1700 E. Campbell St., Phoenix, Ariz., LB, **$338,301** 7.2 mi. U.S. 66, Apache Co. Bids Apr. 20. CD 4/13.

**ARIZONA**—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix,

**M. M. Sundt Constr. Co.,** Box 2592, Tucson, Ariz., LB, **$285,682,** 8.9 mi. prime and tack coat, bit. plant mix, seal coat Tucson Florence Hy., Pima Co. CD 6/12/52.

▲† **United Concrete Pipe Corp.**, Baldwin Park, Calif., LB, **$2,298,483,** est. $2,986,643, earthwork, pipe lines and structures, incl. 11 pumping plants, Central Valley Proj., Spec. DC 4137, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Lindsay, Calif. Bids Apr. 22. CD 3/15.

### BUILDINGS

#### LOW BIDS AND CONTRACTS

**Cawdrey & Vemo,** 3601 Fremont Ave., Seattle 3, Wash., LB, **$707,107,** general contract 3 story COMMUNICATIONS BLDG. addn., SEATTLE, WASH. University of Washington, Seattle, Zone 5, Wash. Bids Apr. 27. CD 3/15.

H. **Halvorson, Inc.**, Ziegler Bldg., Spokane, Wash., LB, **$693,046,** first section, 1 story, 64,000 sq. ft., rein.-con. Northtown SHOPPING CENTER, SPOKANE, WASH. Western Realty & Holding Co., W. 1017 Riverside Ave., Spokane, Wash. Bids Apr. 21. CD 4/16.

▲ **Ross B. Hammond,** 1241 N. Williams St., Portland, Ore., LB **$1,075,488,** 5 story GERIATRICS addn., State Hospital, SALEM, ORE., State Bd. Control, Capitol, Salem, Ore. Bids Apr. 30. CD 4/5.

**McNeil Constr. Co.**, 5858 Wilshire Blvd., Los Angeles, Calif., CA, **$400,000,** 141x243 ft., masonry TRAINING Bldg., BURBANK, CALIF. General Motors Corp., General Motors Bldg., Detroit, Mich. E. T. Heitschmidt, 2010 Wilshire Blvd., Los Angeles, Calif., archt.

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▲ **Branden Constr. Co., 600 16 St., Oakland, Calif., CA, $40,000,000**, subdivision of 3,500 HOMES, MARKETS, SCHOOLS, etc. development at Palma Ceia Village, Mount Eden Township, HAYWARD, CALIF. A. L. Branden & E. W. McGah c/o contractor.

▲ **McDonald Brothers**, 6060 West Adams Blvd., Los Angeles, Calif., CA, **$1,885,890**, South Reseda Junior High SCHOOL, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Feb. 4. CD 2/11, under LB.

**Robert E. McKee, Inc.**, 4700 San Fernando Rd., Los Angeles, Calif. LB, **$648,900**, 2 story, rein.-con. HOSPITAL, Lancaster, PALMDALE, CALIF. Antelope Valley Hospital District, Box 989, Lancaster, Calif. Bids Apr. 20.

▲ **T. H. Hazard**, 740 S. Broadway, Los Angeles, Calif., CA **$1,251,000**, 129 DWELLINGS, Ben Hur Ave., Allerton and Anola Sts., WHITTIER, CALIF. Southwest Homes, Inc., 740 S. Broadway, Los Angeles, Calif. Palmer W. Power, Ocean Center Bldg., Long Beach, Calif., archt. CD 1/8.

## CANADA

### BIDS ASKED—HEAVY CONSTRUCTION

**Que., L'Anse-a-Valleau**—FISHING HARBOR—B.A. 5/19—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. fishing harbor, $240,000. Plans deposit $25. A. Laurent, Postal Station H, Montreal, engr. CD 2/11/53.

### BIDS ASKED—BUILDINGS

▲ **Man., Churchill**—GRAIN ELEVATOR—B.A. 5/26—National Harbor Bd., West Block, Ottawa, Ont., 2½ million bushel grain elevator, $2,000,000. Plans deposit $100. CD 1/4.

### SOON LETS CONTRACT—BUILDINGS

▲ **Ont., Ottawa**—HOTEL—Beacon Realty Co. Ltd., 30 Riedeau St., soon lets contract, 12 story rein.-con., brick, stone 143-suite hotel, Slater St. $1,000,000. I. S. Backler, 4838 Fulton Ave., Montreal, Que., engr. Greenspoon & Assoc., 4151 W. Sherbrooke St., Montreal, Que. archts. CD 4/21.

### HEAVY CONSTRUCTION

#### LOW BIDS AND CONTRACTS

**Poole Constr. Co. Ltd.**, 10503 109 St., Edmonton, Alta., CA, **$388,000**, sewage disposal plant, EDMONTON, ALTA. Municipality, City Hall, Edmonton, Alta. Bids Apr. 15. CD 3/9.

### BUILDINGS

#### LOW BIDS AND CONTRACTS

▲ **O. Biffes & Tambasso Ltd.**, 80 Wimbledon Rd., Toronto, Ont., Owner Builds, **$1,000,000**, 100-unit HOUSING DEVELOPMENT, GUELPH, ONT.

▲ **Orfus Constr. Co.**, 65 Viewmount Ave., Toronto, Ont. Owner Builds, **$1,075,000**. five APARTMENTS, Vinet Cres.-Arthur Ave. and Wilkie Road, York Twp., TORONTO, ONT. CD 12/16.

▲ **Frid Constr. Co.**, 17 Main St. W., Hamilton, Ont., CA, **$1,300,000**, 93-bed HOSPITAL addns., alterations, WOODSTOCK, ONT. Woodstock General Hospital, Woodstock, Ont. Bids Mar. 26, awarded Apr. 28. CD 3/10.

## ALASKA

### BUILDINGS

#### LOW BIDS AND CONTRACTS

▲† **Manson-Osberg and Scheumann & Johnson**, 5209 E. Marginal Way, Seattle, Wash., LB **$5,542,961**, est. $3,950,426, 100x830 ft. rein.-con. in-transit STORAGE BLDG., 1,000 ft. steel pile and concrete marginal wharf, 270,000 cu. yds. dredging, 6,500 lin. ft. railroad, etc. for permanent docking facilities, ENG-95-507-54-52, WHITTIER, ALASKA. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Apr. 30. CD 4/1.

## PUERTO RICO

### HEAVY CONSTRUCTION

#### LOW BIDS AND CONTRACTS

▲† **Montgomery Constr. Co.**, Darlington Blvd., San Juan, Puerto Rico, CA **$1,479,288**, est. $1,725,380. national guard facilities, SAN JUAN, PUERTO RICO. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Apr. 23, awarded Apr. 27. CD 4/30.

# Proposed Projects

## WATER SUPPLY

▲ **Calif., El Centro**—City, 561 State St., voted **$1,300,000** bonds, water systoem imprvs., C. K. Patton, water supt. CD 2/24.

▲ **Ill., Decatur**—City, City Hall, increase filtration capacity of municipal water treatment plant, **$1,200,000**; installing gates to raise level of city reservoir (Lake Decatur) **$748,000**. CD 4/19.

## SEWERS, WASTE DISPOSAL

▲ **Calif., Salinas**—City, City Hall, **$2,040,000** bond election June 8, storm water drainage and sewage disposal systems. CD 3/28/45.

▲ **Ont., Chatham**—City, sewage disposal plant, **$3,000,000**. T. M. S. Kingston, engr.

## BRIDGES

▲ **Ind., Fort Wayne**—City of Fort Wayne, City Hall, and New York, Chicago & St. Louis R.R., Nickle Plate District, P. McKay, div. engr. Calhoun and N.P. tracks, Fort Wayne, track elevation at 8 streets, incl. retaining wall, **$4,150,221**; grading and slope protection, **$251,750**; trestles, **$214,101**; track, signals communications, **$953,742**; misc. track maintenance, **$50,000**; misc. expense underpinning and racing, **$18,100**; extraordinary maintenance, **$40,000**; engineering plans and supervision, **$474,614**; contingencies **$609,862** land, **$486,130**. street work paving and lighting, **$529,585**; prop. damage **$250,000**. De Leuw, Cather & Co., 150 N. Wacker Dr., Chicago, Ill. engrs. CD 11/10/52.

▲ **New York**—Bd. Supervs. Suffolk Co., Riverhead, bascule bridge connecting mainland at Shirley with ocean beach, Brookhaven Twp. **$1,712,000**.

## EARTHWORK, WATERWAYS

▲ **Texas**—Canadian River Municipal Water Auth., C. A. Huff, pres., Pampa, water supply dam proj., Hale Co. **$85,000,000**. Parsons, Brinckerhoff, Hall & Macdonald, Bankers Mortgage Bldg., Houston, consult. engrs.

## PUBLIC BUILDINGS

▲ **Calif., Anaheim**—SCHOOLS—Anaheim Elementary School District, Anaheim, **$1,600,000** bond election June 16, schools. CD 5/20.

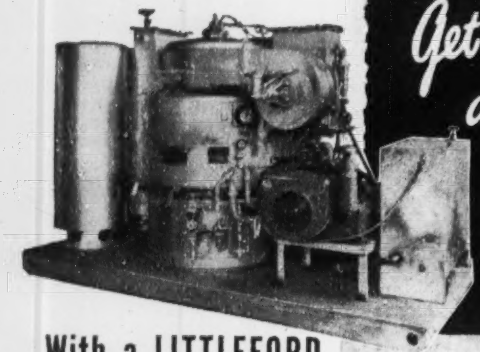
▲ **Calif., Fresno**—SCHOOLS—Fresno City Unified School District, Fresno, **$8,500,000** bond election June 8, schools.

▲ **Calif., Lancaster**—HIGH SCHOOL—Antelope Valley Junior Union High School District, 1000 Division St., Lancaster, voted **$2,000,000 bonds, high school**. CD 6/23/52, under LB.

▲ **Calif., Los Angeles**—HIGH SCHOOL—Los Angeles City School Dist., 1425 S. San Pedro St., plans by Daniel, Mann, Jonson & Mendenhall, 4201 Sunset Blvd., Narbonne High School, Lomita, **$2,243,484**. CD 6/13/52.

▲ **Calif., Los Angeles**—HIGH SCHOOL—Los Angeles City School Dist., 1425 S. San Pedro St., plans by Albert C. Martin & Assoc., 333 S. Beaudry St., high school, 220th St., Moreta Ave., Figueroa St., Wilmington, **$2,000,000**. CD 6/13/52.

▲ **Calif., Los Angeles**—JUVENILE HALL FACILITIES—Los Angeles Co., Hall of Records, **$1,960,000** bond election June 8, Juvenile Hall facilities for boys.



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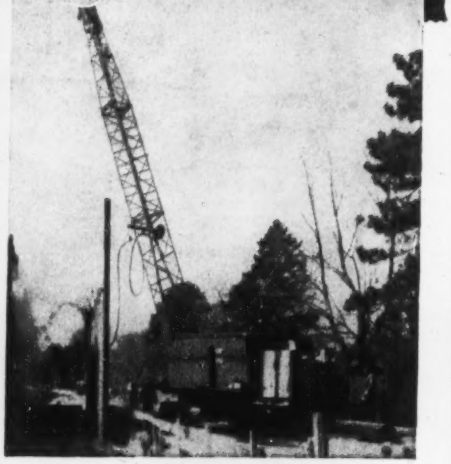

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▲ **Calif., Los Angeles**—POWER GENERATING PLANT—Los Angeles Dpt. Water & Power, 207 S. Broadway steam power generating plant, El Segundo, **$90,000,000**. S. B. Morrks, c/o owner, engr.

▲ **Calif., South Pasadena**—SCHOOL—South Pasadena School District, South Pasadena, plans by George M. & Robert M. Lindsey, 6311 N. Figueroa St., Los Angeles, high school and elementary school **$1,645,000**. CD 4/7.

▲ **Calif., Temple City**—SCHOOL—Temple City Unified School District, 9516 Longden Ave. **$1,900,000** bond election June 15, high school, Temple City Blvd. and Lemon Ave.

▲ **Ind., Indianapolis**—SCHOOLS—Warren Twp. Schools, J. L. Sykes, 1119 N. Delaware St., 5 year school building program, 3 new buildings and other school building addns. **$3,000,000**.

▲ **Ind., Richmond**—SCHOOLS—Richmond School City, Richmond, 5 year building program, incl. 3 school addns., new Senior High School. **$4,000,000**.

▲ **Kan., Leavenworth**—SCHOOL—Bd. Educ., voted **$1,659,000** bonds Apr. 6, Elementary and Senior High School. Williamson & Loebsack, 1245 Topeka Blvd., Topeka, archts. CD 3/30.

▲ **Mass., Boston**—SCHOOL—City, Dpt. School Bldgs., 26 Norman St., plans by Thomas F. McDonough, 25 Huntington Ave., school, William E. Russell Dist., Dorchester. **$1,313,000**.

▲ **Mass., Fairhaven**—SCHOOL—Town, Junior High School Bldg. Comn., John Harrison, chn., 61 Union St., plans by Perley F. Gilbert & Assoc., Inc., 53 Central St., Lowell, Junior High School. **$1,200,000**.

▲ **Mo., North Kansas City**—SCHOOL—**$1,025,000** bond election May 18, Junior High School on 40 acre tract, 48 and Kelsey Rd.

▲ **N. J., Atco**—RESIDENCES—New Jersey Dpt. Institutions, & Agencies, State House, Trenton, plans by Leonard G. Feinen, 320 Lincoln Ave., Hasbrouck Heights. 100 residences, roads, curbs, drains, sidewalks, site imprvs. vicinity Fourth Mental Hospital **$1,500,000**.

▲ **N. J., Erlton (Br. Haddonfield)**—SCHOOL—Delaware Twp. School Bd., Erlton, plans by Edwards & Green 17 S. 5 St., Phila., Pa., elementary school **$400,000**; high school **$2,000,000**.

▲ **N. J., New Brunswick**—RESIDENCE HALL, etc.—Rutgers University, New Brunswick, plans by Kelly & Gruzen, 80 Fifth Ave., New York 3, N. Y., 3 residence hall and dormitory bldgs., 33x244 ft. each, for 972-students and student center, **$3,500,000**. CD 10/1/45.

▲ **N. Y., Brooklyn**—HOUSES—New York City Housing Auth., 63 Park Row, New York, Zone 38, plans by Harrison & Abramovitz, 630 Fifth Ave., New York, Zone 20, Marlboro Houses, 25 seven story bldgs. and 3 sixteen story bldgs. for 1,772 families on site bounded by Stillwell Ave., 86 St., Avenue X and Avenue Y. **$22,445,000**. CD 3/11/52.

▲ **O., Cincinnati**—PARKING GARAGES—City, City Hall, development of 6 parking garages through downtown area. **$2,500,000**. Bond election pending. Charles E. DeLeuw, 150 N. Wacker St., Chicago, Ill., consult. engr. T. J. Montgomery, city engr.

▲ **Pa., Phila.**—OFFICE—General State Auth., 18 and Herr Sts., Harrisburg, plans by Michael J. DeAngelis, 121 N. Broad St., state office or conversion of Rittenhouse Plaza, 19 and Walnut Sts. **$6,500,000**. CD 8/5.

▲ **Pa., Pittsburgh**—OFFICE—General State Auth., 18 and Herr Sts., Harrisburg, plans by Altenhof & Brown, 1230 Park Bldg., state office bldg., Liberty Ave. and Blvd. of the Allies, **$6,000,000**. A. F. Jones, c/o owner, ch. engr. CD 8/5.

▲ **Tex., Port Arthur**—SCHOOLS—Port Arthur Independent School Dist., Port Arthur, bond election May 15, high school. **$3,218,861**; No. 1, elementary school for whites **$425,000**; No. 2, elementary school for whites **$440,000**; No. 3, elementary school for negroes, **$965,000**; conversion existing Thomas Jefferson High School into a Junior High School, **$300,000**; classroom addns. to upper grade schools, **$319,500**; classroom addns, to existing lower grade schools, **$329,361**.

▲ **Utah, Salt Lake City**—SCHOOLS—Bd. Educ., 440 E. First South St., voted **$4,400,000** bonds Apr. 20, schools. CD 3/31.

▲ **Wash., Seattle**—SCHOOLS—Highline School Dist. 401, 253 S. 152 St., plans by Steinhart, Stanley & Theriault, Medical Arts Bldg., Junior-Senior High School at White Center, **$1,000,000**; plans by Mallis & DeHart, Lyon Bldg., elementary school on North Hill, **$300,000**. CD 11/18.

## COMMERCIAL BUILDINGS

▲ **Calif., Van Nuys**—DWELLINGS—Parkwood Estates, 739 N. Highland Ave., Los Angeles, 291 frame, stucco dwellings, Napas St., etc. **$3,000,000**.

▲ **Colo., Denver**—APARTMENT—Owner, c/o L. C. Fulenwider, Jr., Equitable Bldg., plans by Walter W. Ahlschlager, 2505 Turtle Creek Blvd., Dallas, Tex., 15 story apartment, S. University Blvd. **$3,500,000**. CD 9/14.

▲ **D. C., Wash.**—BUILDINGS—St. John's College High School, 1225 Vermont Ave. N.W., various buildings at new school location, Military Rd., Oregon Ave. and 27 St. N.W., **$2,500,000**.

▲ **Ind., Indianapolis**—SHOPPING CENTER—H. P. Wasson Co., Walter Wolfe, Meridian and Washington Sts., Zone 4, 2 and 1 story, main department store in shopping center 4-U-shaped store buildings, paving and parking areas, State Rd. 100 and U.S. Rd. 40. **$7,000,000**. Foster Eng. Co. Ltd., 4741 E. Washington St., Zone 4, consult. engrs.

▲ **Me., Portland and Westbrook**—SHOPPING CENTER—Riverside Realty Corp., c/o Stevens & Saunders, archts. for theatre, 187 Middle St., Portland, shopping center and drive-in-theater, Rte. 25. **$4,000,000**.

▲ **Md., Rockville**—SHOPPING CENTER—Syndicate, incl. Shannon & Luchs Co., 1505 H St. N. W., Wash., D. C., plans by Wilson & Denton Assoc., 1022 20 St. N. W., Wash., D. C., Rockville Plaza Shopping Center, Rte. 240 jct. with N. Washington St. **$2,500,000**.

▲ **Mich., Detroit**—SCHOOL—Catholic Diocese of Detroit, 1234 Washington Blvd., plans by McGrath & Dohman, 2631 Woodward St., and Walter J. Rozycki, 2266 E. Forest St., 3 story, bsmt., brick, steel, concrete girls' parochial high school, Notre Dame Project, East Eight Mile and Kelly Sts., 10 acre site, **$1,000,000**. CD 1/23/52.

▲ **O., Cincinnati**—CHURCH—Christ Church, 318 E. 4 St., plans by David B. Maxfield, Oxford, church; remodeling parish house, 4th St. at Sycamore St. **$1,500,000**. CD 3/29/49.

▲ **Ore., Portland**—HOTEL—Corrigan Properties, Inc., Mercantile Bank Bldg., Dallas, Tex., plans by Barnett Haynes, Barnett & Assocs., 450 Harrison St., San Francisco, Calif., 20 story hotel. **$13,500,000**.

▲ **Ore., Portland**—Y. W. C. A. BUILDING—Young Women's Christian Assn., 834 S.W. Broadway, plans by Glenn Stanton, Concord Bldg., Portland, Ore., 5 story building. **$1,084,000**.

▲ **Pa., Pittsburgh**—HALL OF LAW AND FINANCE, etc.—Duquesne University, 801 Bluff St., plans by Wm. York Cocken, 800 Century Bldg., Pittsburgh, brick, block, steel, stone Hall of Law and Finance, **$1,700,000**; student union bldg., **$1,000,000**; 3 and 4 story Hall of Science, **$1,750,000**; brick, steel Chapel **$1,000,000**; brick block, steel field house, gymnasium and auditorium, **$1,500,000**.

▲ **Tex., Dallas**—OFFICE—Southland Life Insurance Co., Southland Life Bldg., plans by Welton Becket & Assocs., 5657 Wilshire St., Los Angeles, Calif., and Mark Lemmon, consult. archt., 1210½ Main St., Dallas, 40 story bsmnt. office, Live Oak and Olive Sts. **$10,000,000**. CD 1/18.

▲ **Va., Norfolk**—OFFICE—Smith Douglas Co., Bd. Trade Bldg., plans by T. David Fitz-Gibbon, Royster Bldg., 3 or 4 story office. **$2,000,000**.

▲ **Wash., Seattle**—APARTMENT—Lewis Constr. Co., Lowman Bldg., Zone 4, plans by R. H. Peck, 332 2 Ave. W., apartment, 24 Ave. South and Winthrop St. **$1,000,000**.

▲ **Ont., London**—HOMES—Nu-Way Builders, 620 Adelaide St., 200 one and one-half story homes on Springbank Drive and constr. streets, water and sewers. **$1,500,000**.

▲ **Ont., Ottawa**—RESIDENTIAL APARTMENT HOTEL—Whittington Investments Ltd., c/o city clerk, City Hall, residential apartment hotel on site of Strathcona Isolation Hospital, Range Rd. **$2,000,000**.

## INDUSTRIAL BUILDINGS

▲ **Ind., Brookston**—TERMINAL—Standard Oil of Indiana, 910 S. Michigan Ave., Chicago 80, Ill., terminal for distribution 2 mi. south of here, on Hy. 43 and Monon R.R. and on pipe line from refinery in Whiting, Ind. 20-acres, **$1,450,000**. CD 4/8.

▲ **Ia., Des Moines**—STEEL PLANT—Pittsburgh-Des Moines Steel Co., 1015 Tuttle St., steel plant. **$1,000,000**.

▲ **O., Cleveland**—LOADING TERMINAL—New York Central System, J. P. Hiltz, Jr., ch. engr., M. W., 466 Lexington Ave., New York 17, N. Y., "Piggy-back" loading terminal, E. 15 St. between Pittsburg and Orange Aves. **$1,000,000**.

▲ **O., Euclid**—PLANT—Chase Brass & Copper Co., 1949 Rodney St., Waterbury 20, Conn., plant addn. **$4,000,000**.

▲ **Pa., Greensburg**—PLANT—Pittsburgh Plate Glass Co., Gateway Center, Pittsburgh, 1 story, 120x300 ft., steel, brick auto glass mfg. plant South Greensburg, **$3,600,000**.

▲ **Tex., Port Arthur**—PLANT—The Koppers Co., Koppers Bldg., Pittsburgh, Pa., polyethylene plastics production plant, in Pt. Acres on Hy. 73, adjacent owners existing ethylene plant. **$75,000,000. CD 2/13/51.**

## UNCLASSIFIED

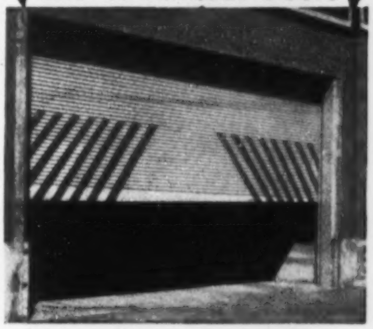
▲ **Ohio**—COAL TRANSMISSION LINE—Pittsburgh Consolidation Coal Co., Koppers Bldg., Pittsburgh, Pa., 110 mi. coal transmission line from Cadiz to Cleveland Electric Illuminating Co. plant, Eastlake, submerged 11 in. steel pipe with two booster pumping stations to maintain pressure of 1,000 lbs. psi. water propelled. **$10,000,000**. Ford, Bacon & Davis, Inc., 39 Broadway, New York, N. Y., consult. engr.

▲ **Tex., Houston**—WAREHOUSES, etc.—Port Comn., c/o Wharf 13, warehouses, **$2,225,000**; access roads, **$200,000**; new docks, **$2,000,000**; imprvs. existing docks and extens, **$1,000,000**; marginal wharves, **$750,000**; railroad tracks, **$150,000**. R. J. Cummins, Bankers Mortgage Bldg., and Lockwood & Andrews, Bankers Mortgage Bldg., consult. engrs. **CD 9/16.**

▲ **Alaska, Anchorage**—WATER TERMINAL FACILITIES—Anchorage Port Auth., Anchorage, **$4,000,000** bond election Oct. 12, deep water terminal facilities CD 8/28/52.

# Double Protection

**Heavy Galvanizing Plus Kinnear Paint Bond Adds To Amazing Long Life of Kinnear Doors**



Kinnear Steel Rolling Doors are doubly protected against the elements —*before they receive prime and finish coats of paint in the field.* A heavy coating of 1.25 ounces of zinc per square foot (ASTM standards) provides lasting weather-resistance. And Kinnear's Paint Bond — a special phosphate treatment — assures *thorough* paint coverage. These rugged space-saving doors are a world-wide favorite for low-cost protection! Send for details.

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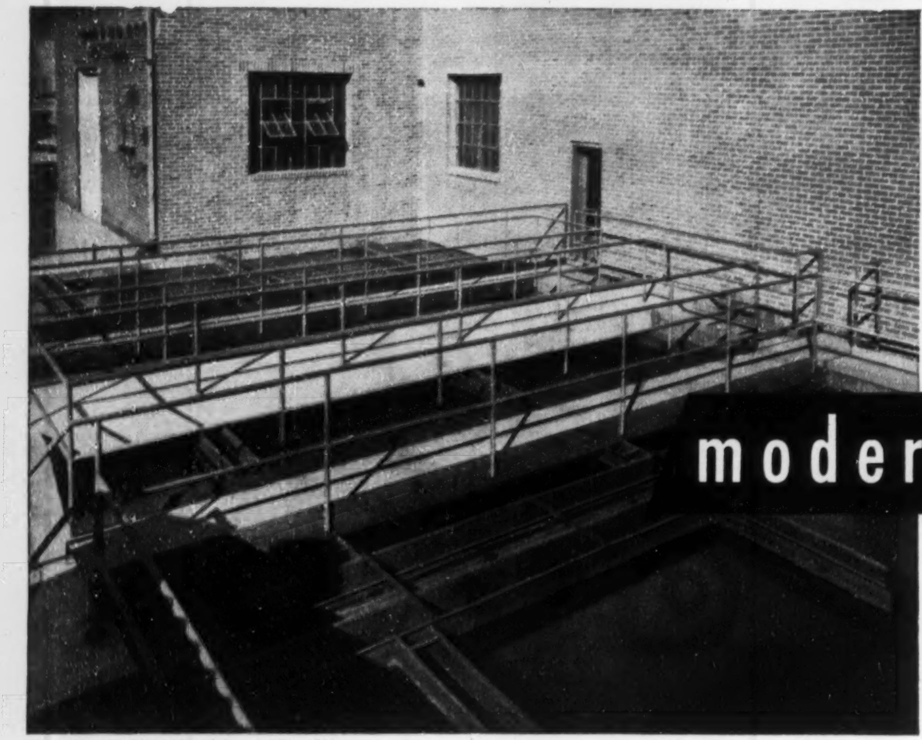

Photo courtesy City of North Kansas City, Missouri

# HOW NORTH KANSAS CITY modernized ITS IRON REMOVAL PLANT

To *triple* the 1912 rate of an old-fashioned settling basin and two filters could be a problem—and quite expensive.

Consulting Engineer Charles A. Haskins, solved it very economically. Two compact, modern Permutit Precipitators were built into the *old* settling basin. Operating on the highly efficient sludge-blanket principle, these Permutit Precipitators assure maximum operating economy.

The results of this modernization—detailed in the table below—speak for themselves:

- Total Iron reduced from 5.0 to 0.1 ppm.
- Manganese reduced from 0.2 ppm to essentially zero.
- Turbidity reduced from 50 to only 3 ppm—permits 19 hour per day filter runs with washing only once every 5 days!
- Hardness reduced to level desired.

For full details on the Precipitator write to The Permutit Company, Dpt. ENR-5, 330 West 42 St., New York 36, N. Y., or to Permutit Company of Canada, Ltd., 6975 Jeanne Mance St., Montreal.

Registered Trade Mark

## *Water Analysis Report Before and After Conditioning*

| | | | PPM as | Raw Water from wells before aeration | Precipitator effluent (unfiltered) |
|---|---|---|---|---|---|
| CATIONS | | Calcium ..........($Ca^{++}$) | $CaCO_3$ | 145 | 55 |
| | | Magnesium .......($Mg^{++}$) | $CaCO_3$ | 103 | 75 |
| | | Sodium .............($Na^{+}$) | $CaCO_3$ | 108 | 105 |
| ANIONS | Alkalinity | Bicarbonate ($HCO_3^{-}$) | $CaCO_3$ | 190 | 42 |
| | | Carbonate ($CO_3^{--}$) | $CaCO_3$ | 0 | 24 |
| | | Hydroxide ($OH^{-}$) | $CaCO_3$ | 0 | 0 |
| | | Chloride .............($Cl^{-}$) | $CaCO_3$ | 35 | 35 |
| | | Sulfate ...........($SO_4^{--}$) | $CaCO_3$ | 146 | 139 |
| | | Total Hardness.................. | $CaCO_3$ | 248 | 130 |
| | | Alkalinity A (Methyl Orange) ..... | $CaCO_3$ | 190 | 66 |
| | | Alkalinity B (Phenolphthalein)...... | $CaCO_3$ | 0 | 12 |
| | | Free Carbon Dioxide............. | $CO_2$ | 16 | 0 |
| | | **IRON (total)**.................... | Fe | 5.0 | 0.1 |
| | | Silica.......................... | $SiO_2$ | 16.8 | 13.0 |
| | | **MANGANESE** ................ | Mn | 0.2 | 0.0 |
| | | **TURBIDITY (after shaking)**........ | | 50 | 3 |
| | | Fluorides....................... | F | 0.5 | 0.4 |
| | | Color.......................... | | Turbid | 5 |
| | | pH............................ | | 7.3 | 9.5 |
| | | Total Hardness (as $CaCO_3$)........ | Result in grains per U.S. Gal. | 15 | 7.6 |

WATER
CONDITIONING
HEADQUARTERS
FOR OVER
40 YEARS...

**PERMUTIT**®

# Bids—Low Bids—Contracts—Second Section

## NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 18, 20 Massachusetts
STREETS AND ROADS
May 18 Massachusetts

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Construction Units, Inc.**, 199 Washington St., Boston, Mass., CA, **$1,780,238**, est. $1,600,000. HIGH SCHOOL, DARTMOUTH, MASS. Town School Bldg. Comn., Dartmouth, Mass. Bids Apr. 16. CD 4/26, under LB.

▲ **L & R Constructors of Medford, Inc.**, 36 Earl Ave., Medford, Mass. LB, **$1,014,750**, est. $1,000,000. Base Bid No. 4. 100 HOUSING units, PHA Mass. 25-1, GLOUCESTER, MASS. Gloucester Housing Auth., George W. McPherson, chn., 128 Main St., Gloucester, Mass. Bids Apr. 30. CD 5/9

## MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 25 Maryland
STREETS AND ROADS
May 18 Maryland May 28 Pennsylvania

† **N. Y., Orangeburg and Kensico**—ANTI AIRCRAFT FACILITIES—B.A. 5/26—U. S. Eng., 80 Lafayette St., New York, Zone 13, anti-aircraft facilities, Serial No. ENG-30-075-54-268. $500,000-$1,000,000. Plans deposit $100.

BIDS ASKED—BUILDINGS

▲ **Pa., Abington** — HOSPITAL — B.A. 5/20 — Abington Memorial Hospital, Abington, X-ray and maternity hospital bldg. addn. $1,903,896. Extended date. Jack S. Steele Co., 1300 Hunting Park Ave., Phila.; engr.-archt. CD 4/29.

▲† **New Jersey**—B.A. 5/21—U. S. Eng., 121 N. Broad St., Phila., Pa., defense facilities, Richwood, Gloucester Co., ENG-36-109-54-306, $2,000,000. The Ballinger Co., 121 N. Broad St., Phila., Pa., engr. and archt.

▲† **Pa., Bristol**—DEFENSE FACILITIES—B.A. 5/21—U. S. Eng., 121 N. Broad St., Phila., defense facilities,, No. 36-109-54-305. $2,000,000. The Ballinger Co., 121 N. Broad St., Phila., engr. CD 4/28.

▲ **N. J., Newark**—HOUSING—B.A. 6/8—Housing Authority of City of Newark, 57 Susex Ave., Housing Project N. J. 2-13, Section II, incl. four 13 story elevator apartment bldgs. $8,000,000. Plans deposit $50. CD 2/18/53, under LB.

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
**D. W. Winkelman Co., Inc.**, Heffernan Bldg., Syracuse, N. Y. CA **$2,045,440**. est. $2,602,000, 4.12 mi. Lake Onondaga West Shore Development-Northwest Arterial Connection, Baldwinsville-State Fair, S.H. 8496, Contr. R.C. 54-49, S.H. 54-5, Onondaga Co. Bids Mar. 18, awarded Apr. 30. CD 3/24, under LB.

▲ **Westinghouse Electric Corp.**, P.O. Box 868, Pittsburgh 30, Pa., CA **$3,574,027**, furnishing, installing power equip. for Rockaway Line, IND Div., Queens Boro, NEW YORK. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. J. G. White Eng. Corp., 80 Broad St., New York 4, N. Y. engrs. Bids Apr. 23 CD 3/22.

▲ **B. Turecamo Constr. Co.**, Belt Parkway, foot of 24 Ave., Brooklyn, N. Y., LB **$1,019,400**, Vernon Ave. bridge, over Newtown Creek, Contr. 10, BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Apr. 28.

▲† **Joseph E. Bennett Co., Inc.**, 2 Elm Pl., Brookline, Mass., CA **$1,348,631**, Air National Guard Facilities (FY 54), Niagara Falls Air Force Base, Serial No. ENG-30-075-54-204, NIAGARA FALLS, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Apr. 27. CD 3/30.

▲ **NEW JERSEY**—New Jersey Hy. Auth., State Office Bldg., 1035 Parkway Ave., Trenton,
**Franklin Constr. Co.**, 12 Central Ave., Newark, N. J., LB, **$2,658,201** single roadway; and **$3,252,027** dual roadway; alternate plan Contract No. 54, Section No. 1, grading, paving, bridges from Passaic River to 280 ft. south of Erie R.R. in Boro of East Paterson, Garden State Parkway, Bergen Co. Bids Apr. 26. CD 4/6.

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **South Oaks Homes**, c/o Lane Realty, 107-40 Queens Blvd., Forest Hills, N. Y. Owner Builds. **$1,000,000.** 54 HOUSES, tract, Woodbury Rd., east of South Oyster Bay Rd., BETHPAGE, N. Y.

▲ **Castagna & Son, Inc.**, 155-10 Jamaica Ave., Jamaica, N. Y. LB **$5,778,916** (base bid) general constr.;
**Jarcho Bros., Inc.**, 38-18 33 St., Long Island City, N. Y. LB **$386,858**, plumbing;
**Gasman Plumbing & Heating Corp.**, 327 Hicks St., Brooklyn 2, N. Y., LB **$917,324**, heating and ventilating;
**E. J. Electric Installation Co.**, 235 East 42 St., New York 17, N. Y., LB **$717,275**, electrical work for constr. City PRISON and REMAND SHELTERS, Atlantic Ave., Boerum Pl., Smith and State Sts., BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids May 5.

▲ **Brotherton Constr. Co.**, 1025 S. 21 St., Harrisburg, Pa., LB **$2,109,000.** armor plate finishing PLANT, Phase II, COATESVILLE, PA. Lukens Steel Co., Coatesville, Pa. Gilboy & O'Malley, 1810 Rittenhouse Square, Phila., Pa., engrs.-archts. CD 4/29, under LB.

▲ **C. C. Davis Constr. Co.**, Rear 220 Bridge St., New Cumberland, Pa., CA **$1,151,433**, general constr. county PRISON BLDG., 27 St. and Rte. 422 at site of county home, HARRISBURG, PA. Dauphin county Comn., Court House, Harrisburg, Pa. Bids Apr. 14. CD 4/20, under LB.

▲ **Curtis Bailey Co.**, 69th and Walnut Sts., Upper Darby, Pa., Separate Contracts, **$1,300,000.** RESIDENTIAL DEVELOPMENT, Ridge Rd., LINWOOD, PA. Erling Wenge, McClatchy Bldg., Upper Darby, Pa., archt.

▲ **Welsh-Grant Corp.**, St. Davis, Pa., Separate Contracts, **$2,000,000.** RESIDENTIAL DEVELOPMENT, Grant Ave and Lott St., PHILA., PA. Lewis J. Cowan, 1505 Pine St., Phila., Pa., archt.

▲ **Edward J. Walsh, 111 Fairfield Ave., Upper Darby,** Pa., Separate Contracts, **$4,000,000,** RESIDENTIAL DEVELOPMENT, Woodland and Sproul Rds.; **$4,000,000, RESIDENTIAL DEVELOPMENT, Roling and State** Rds., SPRINGFIELD, PA. David Slott, 7060 Garrett Rd., Upper Darby, Pa., archt.

▲ **John McShain, Inc.**, 3 W. Franklin St., Baltimore 1, Md. LB **$1,659,000.** 208x208 ft., steel, rein.-con., brick, concrete block county OFFICE, TOWSON, MD. Comrs. Baltimore Co., Court House, Towson, Md. Bids Apr. 29. CD 4/13.

▲ **Southeastern Builders, Inc.**, P. O. Box 1569, Wilmington, Del., Separate Contracts, **$1,500,000,** RESIDENTIAL DEVELOPMENT, Garfield Park, WILMINGTON, DEL.

## SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 19 Virginia
STREETS AND ROADS
May 19 Virginia

▲† **Kentucky and Ohio**—B.A. 5/27—U. S. Eng., P.O. Box 59, Louisville 1, Ky., reconstruction of Lock No. 1, Green River, in Greenup Co., Ky., and Scioto Co., Ohio, along and across Ohio River about 4 mi. downstream from Greenup, Ky., CIVENG-15-029-54-113, $5,000,000.

BIDS ASKED—BUILDINGS

▲ **Ga., Waycross**—HOSPITAL—B.A. 5/20—Ware County, hospital, $1,000,000. Plans deposit $50. Gregson & Ellis, Mortgage Guarantee Bldg., Atlanta, archts. CD 5/12/52.

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **FLORIDA**—State Road Dpt., Tallahassee,
**H. E. Wolfe Constr. Co.**, Box 1361, St. Augustine, Fla., LB, **$1,123,214**, 2.729 mi. State Rd. 55, Job 1515-105, Pinellas Co.;
**Noonan Constr. Co.**, P. O. Drawer, 470, Pensacola, Fla., LB, **$84,855**, 12.209 mi. State Rd. No. 10, Job 4801-108, Escambia Co.;
**Coggin & Deermont**, Chipley, Fla., LB, **$82,989** 5.001 mi. State Rd. No. S-69-A, Job 5363-150, Jackson Co. Bids Apr. 30. CD 4/21.

▲ **Sullivan, Long & Hagerty**, 2026 2 Ave., Bessemer, Ala., LB, **$1,699,120**, sanitary sewerage imprvs., MONTGOMERY, ALA. City, City Hall, Montgomery, Ala. Bids Apr. 15. CD 3/17.

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **J. W. Bateson Co.**, Irwin-Keasler Bldg., Dallas, Tex., CA, **$1,728,870** HOUSING UNITS, ATHENS, GA. Athens Housing Auth., Broad St., Athens, Ga. Bids Apr. 22. CD 5/3, under LB.

▲ **Byck-Worrell Constr. Co.**, E. Bay St., Savannah, Ga., CA, **$1,573,000,** HOTEL Addn., ATLANTA, GA. Dinkler Plaza Hotel, Forsyth St., Atlanta, Go. Bids Mar. 26. CD 3/31, under LB.

▲ **James L. Bracewell & Co.**, Toccoa, Ga., CA, **$1,068,443,** SCHOOLS, CLARKSVILLE, GA. Habersham Co. Bd. Educ., Clarksville, Ga. Bids Apr. 1. CD 4/14, under LB.

▲ **H. G. Tinker**, Macon, Ga., LB, **$1,198,482,** 9 SCHOOL Projects, GREENVILLE, GA. Meriwether Co. Bd. Educ., Greenville, Ga. Bids Apr. 13. CD 3/17.

▲ **Ray M. Lee Co.**, 1004 Egewood Ave., Atlanta, Ga., CA **$1,160,000.** Baroness Erlanger HOSPITAL addn., CHATTANOOGA, TENN. City, City Hall, Chattanooga, Tenn. Bids Mar. 31. CD 4/14 under LB.

## MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 18 Indiana
STREETS AND ROADS
May 18 Indiana

BIDS ASKED—BUILDINGS

▲ **Mich., Grand Rapids**—OFFICE—B.A. 5/20—At office Smith-Hinchman & Grylls, archts., 800 Marquette Bldg., Detroit, brick, steel, concrete, telephone office and dial center for Michigan Bell Telephone Co., 1365 Cass St., Detroit, Mich., $5,000,000. CD 3/8.

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., Columbus,
**Sutton & Stewart, Inc.**, Main St., Bridgeport, O., CA **$150,988,** est. $137,600, Type T-35, 1.259 mi., U. S. R. 30, Sects. (31.91-32-10). St. Clair and Liverpool Twps., Columbiana Co.;
**The W. M. Brode Co.**, 100 Elizabeth St., Newcomberstown, O., CA **$438,616,** est. $478,000, Type T-31 and structure 0.769 mi., S.R. 76, Sect. 11.71; S.R. 621, Sect. 0.86, Coshocton Co.;
**Fenton Constr. Co.**, P.O. Box 310, Ashland, O., CA **$62,997,** est. $74,570, Type T-30, T-31, T-32, 20.18 mi. Proposals Nos. 1 to 8 inclusive (1) Ashland-SR 302-10.90; (2) Ashland-SR 511-6.07; (3) Ashland-SR 511-14.60; 15.85; (4) Ashland-SR 511-18.44 (Pt.); (5) Richland-SR 178-0.00, 0.44, 3.32 (Pt.); (6) Ashland-SR 603-1.29, 1.68; (7) Ashland-SR 603-4.17, 4.23, 6.51; (8) Richland-SR 603-6.13, Ashland and Richland Counties;
**The Finke Eng. Co.**, 114 S. Perry St., Dayton, O., CA **$74,393,** est. $75,150, Type T-35 on B-70, 0.497 mi. S.R. 4, Sects. (22.20-22.56), Mad River Twp., Montgomery Co.;
**The Ralph H. Fulk Co., Inc.**, Box 301, Hebron, O., CA **$98,974,** est. $112,333. Type T-30, T-32, 21.21 mi. (1) Lawrence-SR 75-10.50, 25.06; (2) Jackson-SR 75-0.00. Jackson and Lawrence Counties;
**Walter H. Jones**, Rte. No. 1, Wooster, O., CA **$68,154,** est. $71,600, Type T-30, T-31, and T-32. 26.82 mi. (1) Medina-SR 76-3.98 (pt.); (2) Wayne-SR 226-2.94, 5.79; (3) Wayne-SR 241-3.02; (4) Wayne-SR 301-0.00, 0.16, 2.47, 2.76; (5) Wayne-SR 548-8.22 (pt.). Medina and Wayne Counties;
**The McCourt Constr. Co.**, 720 Home Ave., Akron, O., CA **$112,743,** est. $112,650, Type T-35, 15.3 mi. (1) Portage-SR 80-0.54, 2.48; (2) Portage-SR 306-(0.00, 0.06, 0.79 (Pt.) Aurora), 0.79 (Pt.); (3) Portage-SR 43-7.76; (4) Portage-SR 261-0.00, 0.86; (5) Summit-SR 532-11.98 (pt.); (6) Summit-SR 631-9.51, 11.11, ortage and Summit Counties;
**Ohio Eng. Co.**, 15 Sixth St., Lorain, O., CA **$73,296,** est. $88,440, Type T-35, 12.14 mi., USR 30-N-6.97, 7.34, 7.48, 12.07, 12.29, Hancock Co.;
**Ohio Road Imprvt. Co.**, 30 E. Broad St., Columbus, O., CA **$60,973**, est. $73,500, Type T-35, 2.414 mi., U.S.R. 6 Sections (14.78-16.57), Village of Huron and Huron Twp., Erie Co.;
**W. H. Ringwald & Sons Co., Inc.**, 42 E. Second St., Chillicothe, O., CA **$1,427,777**, est. $1,559,900. Type T-71, T-35 and structures, 6.847 mi. U. S. R. 23, Sections (3.79-8.69), Orange, Berling, Liberty and Delaware Twps., Delaware Co.;
**The Shelly Co.**, Thornville, O., CA **$65,815**, est. $80,910, Type T-30, T-31, T-32, 29.74 mi., (1) Muskingum-SR 146-3.71, 7.94; (1-A) Muskingum-SR 146-3.71, 7.94; (2) Muskingum-SR 156-0.00; (3) Muskingum-SR 208-0.58, 2.88, 10.62 (10.67 Adamsville); (4) Muskingum-SR 209-0.00; (5) Guernsey-SR 209-0.00. Guernsey and Muskingum Counties;
**Twin Constr. Co.**, Rte. No. 3, Chillicothe, O., CA **$96,082,** est. $103,400, Type T-35, 0.047 mi., Part No. 1, Madison Twp.; Type T-35 and structures, Part No. 2, Madison Twp. S. R. 335, Sections 9.19, 9.79, OAA-S-10 (3), Parts Nos. 1 and 2, Scioto Co. Grand total $2,730,808. Bids Apr. 27. CD 4/14.

▲ **E. E. Schnitzius Co.**, 3707 Sutherland St., Indianapolis, Ind., LB, **$1,222,488,** 2,000 ft. runway extension, for jet plane squadron, Air National Guard, Hulman Field, TERRE HAUTE, IND. Indiana Air National Guard, State House, Indianapolis, Ind. Bids Apr. 20. CD 3/29.

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Brune-Harpenau Builders, Inc.**, Glenway Ave., Cincinnati, O., Owner Builds. **$8,500,000** 486 one-family brick, bsmnt. HOMES on streets in Green Acres Subdivision of Glenway Ave., CINCINNATI, O. Wm. Byrnes, 1659 Sutton St., Cincinnati, O., archt. Joseph Allen, 4638 Glenway Ave., Cincinnati, O., engr. Awarded Apr. 28.

▲ **J. J. Hume Co.**, Lorain, O., CA Approx. **$1,000,000.** PUBLISHING BLDG., Broadway and Elyria Ave., LORAIN, O. Lorain Journal Co., Lorain, O.

▲ **Maple Heights, Inc.**, 38 and Bolton Sts., Indianapolis, Ind., Owner Builds, **$1,000,000,** 72 brick HOMES, in Maple Heights Addn., INDIANAPOLIS, IND.

▲ **Edward Kidera**, c/o J. Wm. Hasskarl, archt., Thornbufy Lane, Libertyville, Ill. Own Forces. **$1,500,000.** SHOPPING CENTER, near ADDISON, ILL.

▲ **Geo. Sollitt Constr. Co.**, 109 N. Dearborn St., Chicago 2, Ill., CA, Total est. **$2,220,000.** sub-structure only 21 story APARTMENT and GARAGE, 175 E.

Delaware St. CHICAGO, ILL. La Salle National Bank, Trust No. 15885, 135 S. La Salle St., Chicago, Ill. CD 12/4.

▲ **Power Constr. Co.,** 212 S. Marion St., Oak Park, Ill., LB, **$2,770,000** (1) academic bldg. (2) gymnasium and cafeteria (3) tunnel, swimming pool at SCHOOL, HIGHLAND PARK, ILL. School District No. 113, 300 Vine St., Highland Park, Ill. Bids Apr. 20. CD 3/25.

▲ **Hamann Constr. Co.,** Manitowoc, Wis., CA, **$1,257,824,** general contract Central Catholic High SCHOOL, GREEN BAY, WIS. Norbentine Fathers, Green Bay, Wis. Bids Apr. 20. CD 3/31.

▲ **L. O. Stocker Co., Inc.,** 3928 Lindell St., St. Louis, Mo. CA, **$1,200,000,** brick, concrete PLANT, East 16 St., HOLLAND, MICH. General Electric Co., Book Bldg., Detroit, Mich. CD 4/8.

▲ **Edward Schendel & Co.,** 3419 Fort St., Wyandotte, Mich., CA, **$1,250,000,** brick, steel, concrete TELEPHONE OFFICE and DIAL EXCHANGE BLDG., TRENTON, MICH. Michigan Bell Telephone Co., 1365 Cass St., Detroit, Mich. Smith, Hinchman Grylls, 800 Marquette Bldg., Detroit, Mich., archts.

## WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

May 20 Kansas
May 21 Minnesota, North Dakota

STREETS AND ROADS

May 18, Colorado, Iowa
May 20, Kansas Missouri
May 21 Minnesota, North Dakota
May 27 Montana

▲† **South Dakota-Nebraska**—B.A. 6/23—U. S. Eng., 1709 Jackson St., Omaha, Neb., 340x110 ft. rein.-con. power house, installing turbines, electrical equip., switchyard and transformer yard on Nebraska side, Gavins Point Dam on Missouri River, $2,000,000-$5,000,000.

BIDS ASKED—BUILDINGS

▲ **Wyo., Casper**—HOSPITAL—B.A. 5/20—Natrona County Hospital Assn., Casper, 4 story, bsmnt., 120-bed hospital. $1,000,000. Fisher & Fisher, Denver Natl. Bldg., Denver, Colo., engrs. and archts. CD 7/23.

▲ **Colo., Denver**—SEMINARY—B.A. 5/24—Archdiocese of Denver, 1536 Logan St., 3 story dormitory and 1½ and 2 story library, St. Thomas Seminary Addns. $1,000,000. John K. Monroe, 400 Security Life Bldg., Denver, Colo., engr. and archt. CD 10/6.

▲ **N. M., Santa Fe**—PENITENTIARY BLDGS., etc.—B.A. 5/25—Bd. Comrs. Penitentiary of New Mexico, Capitol Bldg., Phase II, structural steel frame, roman brick, etc., penitentiary bldgs., facilities. $3,225,000. Extended date. CD 4/27.

▲ **Tex., Houston**—BANK or OFFICE—B.A. 6/3—Houston Bank & Trust Co., 119 Main St., revised plans, 3 story bsmnt. and sub-bsmnt., 60,000 sq. ft. bank or office, will have concrete fdn. sufficient to carry 12 story bldg., (9 more floors to be added later). $1,000,000. Kenneth Franzheim, 902 Levett Blvd., archt. B. Johnson & Assocs., 4926 Travis St., and Reinhold Fensch, 5413 Pine St., engrs. CD 5/3.

▲ **Minn., Brainerd**—SCHOOL—B.A. 6/8—Bd. Educ., C. Fleischer, clk., Junior High School addn. Over $1,000,000. Plans deposit $30. H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt. CD 11/17/53.

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **J. A. Jones Constr. Co.,** 209 W. 4 St., Charlotte, N. C. CA, **$7,995,666,** New Lock No. 19, Stage II on Mississippi River, Inv. 11-117-54-25, IOWA-U. S. Eng., Clock Tower Bldg., Rock Island, Ill. Bids Apr 15. CD 4/29, under LB.

▲ **Pittsburgh-Des Moines Steel Co.,** 1015 Tuttle St., Des Moines, Ia., CA Approx. **$1,000,000.** suspension bridge over Missouri River at Plattsmouth to carry two pipe lines, Plattsmouth, NEBRASKA. Northern Natural Gas Co., 2223 Dodge St., Omaha, Neb., Matthews & Kenan, Transit Tower, San Antonio, Tex., engrs. CD 10/9/52, under Texas.

▲† **Abel-Dobson-Robinson Constr. Co.,** 1815 Y St., Lincoln, Neb., CA, **$2,362,864.** operational apron, Lincoln Air Force Base, Inv. 25-066-54-75, LINCOLN, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids May 5. CD 5/5, under LB.

▲ **C. H. Leavell & Co.,** 1900 Wyoming St., El Paso, Tex., and **Coastl Bend Constr. Co.,** 1220 S. Staples St., Corpus Christi, CA **$3,408,000.** Constr. O. N. Stevens Water filtration plant, appurtenances, at Calallen, CORPUS CHRISTI, TEX. City, City Hall, Corpus Christi, Tex. Bids Apr. 21. CD 4/27, under LB.

▲ **Koppers Eng. & Constr. Div.,** 926 Koppers Bldg., Pittsburgh 19, Pa., CA. Total est. **$75,000,000.** polyethylene plastics PLANT, Hy. 73, PORT ARTHUR, TEX. Koppers Co., Koppers Bldg., Pittsburgh, Pa. CD 4/30.

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **City,** Lubbock, Tex., cancelled former contract, AUDITORIUM-COLISEUM, LUBBOCK, TEX. CA **$1,420,109,** est. $1,500,000-$2,000,000. Haynes & Kirby, 192 Dixie Dr. San Antonio, Tex., archts. New bids 5/3. CD 4/13, under CA.

## FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

May 27 California

STREET AND ROADS

May 25 Idaho
May 26, 27 California

BIDS ASKED—BUILINGS

▲ **Calif., San Francisco**—HOUSING—B.A. 5/27—Housing Auth. of San Francisco, 440 Turk St., San Francisco, general construction of Hunters View Housing, Project Cal-1-18-Site 3. CD 7/19/49.

### HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **IDAHO**—State Hy. Dpt., Boise,
**Peter Kiewit Sons' Co. & Le Boeuf-Daugherty,** Longview, Wash., CA, $1,135,332, Alternate No. 1, 5,897 ft. concrete bridge and south approach 1.67 mi. U. S. 95, Bonner Co. Bids Apr. 6, awarded Apr. 14. CD 4/12, under LB.

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Howard S. Wright & Co., Inc.,** 407 Yale Ave. N., Seattle, Wash., CA, **$1,346,963,** 3 story, 36x171 ft., rein.-con. addns. with smaller section going up more than 4 stories, plus existing HOSPITAL structure alterations, SEATTLE, WASH. Swedish Hospital, Summit Ave. and Columbia St., Seattle, Wash. Bids Apr. 8. CD 4/13, under LB.

▲ **Imperial Building Co.,** 470 S. Beverly Dr., Beverly Hills, Calif., CA, **$2,301,900,** 258 frame, stucco DWELLINGS Haas Ave., Daleside Ave., etc., LENNOX, CALIF. Delaware Corp., 470 S. Beverly Dr., Beverly Hills, Calif. Wm. Bray, 962 N. Cienega St., Los Angeles, archt.

## CANADA

BIDS ASKED—BUILDINGS

▲ **Ont., Millbrook**—REFORMATORY—B.A. 5/20—Dpt. P. Wks., Toronto, general contract; mechanical trades contract, incl. plumbing, drainage, water supply, heating, ventilating and refrigeration, electrical work for Ontario Reformatory. Total est. $2,500,000. Plans deposit $50 for general contract, $30 for each trade. G. N. Williams, c/o owner, archt. CD 12/8/52.

SOON LETS CONTRACT—BUILDINGS

▲ **Ont., Whitby**—PLANT, etc.—B.A. 5/13—Dunlop Tire & Rubber Goods Co. of Canada Ltd., 870 Queen St. E., Toronto, soon lets contract steel, brick, glass plant, factory and office. $1,500,000. Margison & Babcock, 119 Isabella St., Toronto, engrs. CD 12/30/47.

### BUILDINGS

LOW BIDS AND CONTRACTS

▲ **W. H. Cooper Constr. Co. Ltd.,** 21 E. Hunter St., Hamilton, Ont., CA, **$5,000,000,** SHOPPING CENTER, on former race track site, HAMILTON, ONT. E. P. Taylor-Angus Corp. Ltd., 15 W. King St. W., Toronto, Ont. CD 11/25.

(Proposal Advertisements see pp. 82 to 85)

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CONCRETE VIBRATOR

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Maginniss
POWER TOOL CO.
Mansfield, Ohio

# UNIT PRICES

## Close bidding on N. Y. Thruway connection

The low bid of $2,045,439 on a 3½-mile portion of the Northwest Arterial Connection dipped 21% below the engineer's estimate. Highest of the three bids submitted was 15% below. William Robinson, Syracuse District Engineer in charge, will direct all work for the New York Department of Public Works. B. D. Tallamy is State Superintendent of Public Works.

The project includes a high-capacity limited access thruway-type divided highway along the west shore of Lake Onandaga between the State Fair Ground and the State Thruway's Rte. 48 traffic interchange.

Two twin, 25-ft span, concrete frame bridges, with paved widths of 49 ft and safety walks on each side will cross Nine Mile Creek. Untreated timber piles will support the bridge and wing walls below water elevation 362. Creosoted piles will be used where the cut-off elevation is above 362.

Construction also includes a new drainage system for the arterial highway and for the access and service roads, as well as temporary drainage for the areas of future pavement. Asphalt concrete will pave 1.48 mi; 9-in. cement concrete 0.53-mi.

The contractor will not have a clear site for work because of interference from roadway use, adjacent contractors, work by owners and operators of utilities. Unit prices allow for these conditions.

D. W. Winkelman Co., Inc., Syracuse, N. Y., was low bidder, 4% below the second bid. The items that made him low are: a 43% difference on unit prices for selected borrow that saved $31,500, a 33% difference that saved $37,400 on trench, culvert and bridge excavation, and a 31% or $20,000 saving on cement concrete pavement. Total difference between the two bids was $99,761.

The two bridges and all paving work must be completed and open to traffic when the State Fair opens Sept. 1. Miscellaneous grading and drainage work on the service and access roads, and all landscaping work must be ready Dec. 1.

Because of a labor shortage in Onondaga County, a six-day work week and 10-hr work day are permitted.

Prevailing minimum wages include: carpenter $2.67 per hr, structural iron worker $2.95, mechanic $2.50, bulldozer operator $2.50, pipe layer $2.05, dump truck operator $1.53, laborer $1.75.

All materials will be furnished by the contractor.

Railhead is at the job site. Bidders include:

| | | |
|---|---|---|
| 1C | D. W. Winkelman Co., Inc., Syracuse, N. Y. | $2,045,439 |
| 2 | S. J. Groves & Sons Co., Syracuse, N. Y. | 2,138,200 |
| 3 | A. S. Wikstrom, Inc., Skaneateles, N. Y | 2,214,470 |
| EE | Wm. Robinson, NYS Dep't of Public Works, Syracuse, N. Y. | 2,602,000 |

| Bids: 3-18-54 | | | Unit Prices | |
|---|---|---|---|---|
| Item | Unit | Quantity | 1C | 2 |
| Clearing & grubbing | ls | nec | $23,000 | $23,500 |
| Compact control bldg | ea | 1 | 1,000 | 1,000 |
| Furn water equipment | ls | nec | 3,500 | 3,750 |
| Applying water | Mgal | 6,990 | 2.00 | 2.50 |
| Selected borrow | cy | 42,000 | 1.00 | 1.75 |
| Excavation: | | | | |
| Uncl | cy | 1,009,200 | 0.79 | 0.79 |
| Unsuitable mat | cy | 67,000 | 0.60 | 0.65 |
| Trench, culv & br | cy | 18,700 | 4.00 | 6.00 |
| Trim rd section | lf | 19,750 | 0.55 | 0.50 |
| Prepare fine gr | sy | 90,300 | 0.30 | 0.25 |
| Pipe underdr opt, 8" dia | lf | 10,250 | 0.80 | 1.00 |
| CM pipe, 12" | lf | 100 | 3.50 | 3.40 |
| 18" | lf | 100 | 4.50 | 4.40 |
| 21" | lf | 100 | 5.50 | 5.00 |
| 24" | lf | 1,950 | 6.50 | 6.50 |
| 30" | lf | 680 | 8.00 | 7.80 |
| CI pipe, 18" | lf | 200 | 9.00 | 10.50 |
| 24" | lf | 340 | 17.00 | 17.25 |
| 30" | lf | 50 | 26.00 | 27.00 |
| RC culv pipe, 15" | lf | 1,300 | 4.50 | 4.25 |
| 18" | lf | 260 | 5.50 | 5.25 |
| 24" | lf | 1,110 | 8.50 | 7.80 |
| 30" | lf | 1,740 | 12.00 | 11.50 |
| 60" | lf | 450 | 32.00 | 30.00 |
| RC cattle pass | lf | 130 | 44.00 | 43.00 |
| Portland cement, cl 2 | bbl | 4,160 | 4.00 | 4.00 |
| PC, cl 1A | bbl | 6,930 | 4.00 | 4.00 |
| PC, cl N | bbl | 607 | 4.50 | 4.00 |
| Furn & apply CaCl | ton | 42 | 50.00 | 45.00 |
| Cl 1A conc for struct | cy | 1,650 | 48.00 | 60.00 |
| Cl 1 conc | cy | 1,125 | 48.00 | 45.00 |
| Met reinf, conc pvmt | syP | 16,000 | 0.75 | 0.75 |
| Steel fabric reinf | sy | 610 | 0.75 | 0.45 |
| Transv jt supports, opt | lf Jt | 1,440 | 1.50 | 1.40 |
| Long jt suppts, opt | ea | 2,000 | 0.75 | 0.75 |
| Bar reinf, struct | lb | 230,650 | 0.14 | 0.13 |
| Misc metals | lb | 12,400 | 0.50 | 0.50 |
| Beam type guide bail (RC posts) | lf | 13,500 | 3.00 | 3.00 |
| RC guide posts | ea | 1,240 | 8.00 | 9.00 |
| Metal railing | lf | 605 | 15.00 | 15.00 |
| Fndn crse grav | cy | 23,700 | 2.00 | 2.50 |
| Fndn crse broken stn | cy | 7,300 | 7.00 | 7.80 |
| Bot crse bit macad pen method asph | cy | 5,620 | 7.00 | 8.00 |
| Cmt conc pvmt | cy | 4,000 | 11.00 | 16.00 |
| Cmt conc pvmt | cy | 75 | 33.00 | 30.00 |
| Asph conc, opt | ton | 10,000 | 9.00 | 9.00 |
| Treat with bit mat | gal | 255,000 | 0.30 | 0.17 |
| Bit mat "A" paving | gal | 100,000 | 0.16 | 0.19 |
| Maint & prot traffic | ls | nec | 25,000 | 20,000 |
| Dry rip rap | cy | 710 | 17.00 | 16.00 |
| Rem exist superstruct | ls | nec | 1,500 | 1,428 |
| Temp timber sheet piling | sf | 20,400 | 1.00 | 1.00 |
| Untreated timb piles | lf | 28,600 | 1.75 | 2.00 |
| Creosoted timb piles | lf | 11,600 | 2.20 | 2.00 |
| Untr tim test piles | lf | 400 | 8.00 | 20.00 |
| Furn equipmt for driving piles | ls | nec | 2,500 | 2,500 |
| Scrd grav, loose | cy | 150 | 5.50 | 5.00 |
| Conc curb | lf | 940 | 3.00 | 3.15 |
| Conc gutters | sy | 60 | 4.50 | 5.75 |
| CB's manholes & drop inlets | cy | 145 | 100 | 90.00 |
| Alter manholes & catch basins | ea | 1 | 50.00 | 100 |
| Conc row markers, low | ea | 45 | 9.00 | 10.00 |
| Conc row markers, hi | ea | 50 | 10.00 | 12.00 |
| Timber & lumber | Mfbm | 15 | 250 | 250 |
| Run of bank grav fil | cy | 6,865 | 4.00 | 2.50 |
| Disposal of bldgs | ea | 76 | 1.00 | 1.00 |
| Topsoil placed fr stockpiles | cy | 2,120 | 1.25 | 1.25 |
| Seeding | ac | 6.18 | 300 | 330 |
| Sodding | sy | 530 | 1.50 | 2.00 |
| Transplanting, DBH: | | | | |
| 4" to 6" | ea | 13 | 200 | 150 |
| 7" to 9" | ea | 5 | 250 | 275 |
| 10" to 12" | ea | 1 | 300 | 400 |
| Chain link fence—6' | lf | 6,000 | 3.00 | 3.00 |
| F&p 6" CI water main | lf | 400 | 7.00 | 6.75 |
| F&p 8" CI water main | lf | 340 | 7.00 | 8.25 |
| F&p 16" OD stl slve | lf | 400 | 8.00 | 12.50 |
| F&p 20" OD stl slve | lf | 340 | 9.00 | 15.00 |
| CaCl treated grav outside shoulders | cy | 6,900 | 3.20 | 3.00 |
| Grav ins shoulders | cy | 720 | 3.20 | 3.00 |

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## MEETINGS

# River pollution control, chlorination are European sanitation seminar topics

Sanitation experts from 21 European countries met in Opatija, Yugoslavia, on April 20-30 for intensive discussion of river pollution control and water chlorination practices. The occasion was the fourth European seminar for sanitary engineers which was conducted by the World Health Organization in cooperation with the Rockefeller Foundation and the Yugoslav government.

In addition to the 51 European delegates there were two lecturers from the United States—Morrison B. Cunningham, president of the American Water Works Assn., and Edward J. Cleary, executive director and chief engineer of the Ohio River Valley Water Sanitation Commission. Mr. Cunningham spoke on experiences with chlorination and Mr. Cleary conducted a session on water pollution control philosophy and practice.

Conclusions from the seminar with regard to the problem of pollution were as follows:

(1) Industrial pollution contributes the greatest amount of stream degradation in many areas of Europe; while seeking to curb existing sources—which can be done only with the greatest difficulty and which may take a long time —it was agreed that prohibition of new sources should be immediately enforced.

(2) Successful control can be exercised only by organizations with authority over entire river basins. Steps already have been taken in this direction on an international basis by the creation of a Rhine River commission on which five nations—Switzerland, France, Luxembourg, Germany and Holland—are represented.

(3) Desirable quality of water to be maintained in a river is a matter that should reflect the use to which the water is to be put, and also may depend in considerable degree upon public opinion as to what quality conditions are within the realm of economic achievement.

Although there was no unanimity as to what constitutes desirable water quality for specific uses (a question that now is receiving close attention in the Ohio River Valley), there was agreement that rivers should be maintained so as not to be offensive to sight or smell and that pollution loads must not be permitted to exceed the self-purification capacity of the stream. This would constitute a minimum standard of regulation.

- **Views on water chlorination**—With only scattered exceptions, the use of chlorine in water supplies found few advocates among the European delegates. While not denying the importance and usefulness of chlorine as a water sterilizing agent, opposition to its application was based on: (1) The "abnormal" tastes it imports to natural waters; and (2) to the fact that high priority ground-water sources predominate in Europe (as contrasted with the U.S. where 75% of the supplies are from surface sources).

With regard to maintaining a chlorine residual throughout the distribution system, as is now common practice in the United States, there was small enthusiasm. Doubts were expressed that the presence of free chlorine in quantities acceptable to European consumers would be effective. Good engineering and plumbing practices were held to be the first line of defense against pollution, namely: the maintenance of adequate pressure in the mains, efficient leak detection and the avoidance of back-siphonage and cross-connections.

While ozone was recognized as an effective bactericide and its successful use acknowledged, there was virtually no discussion on the relative merits of ozone and chlorine except that it was brought out that ozone treatment leaves no after-taste. The hope was expressed that research might be directed toward seeking some reagent better adapted to the needs in Europe for a cheap and non-odor-producing sterilization technique.

Chairman of the seminar was Dr. M. Petric, professor of sanitary engineering of the Institute of Hygiene, Zagreb, Yugoslavia, and a graduate of Harvard Engineering School in 1926. Vice-chairman was Prof. W. F. J. M. Krul, director of The Netherlands Government Institute for Drinking Water, The Hague.

The seminar was organized under the direction of Renato Pavenello, sanitary engineer of the European office of the WHO and a University of Michigan graduate. He was assisted by Dr. Robert Burden, sanitary engineer of the Paris office of the Rockefeller Foundation.

## Building cost and price roundup

**Indexes, 1913 = 100**

| | | 1953 | | 1954 | | |
|---|---|---|---|---|---|---|
| **Weighted cost indexes** | **Orig. base** | **Sept.** | **Dec.** | **Mar.** | **Apr.** | **May** |
| ENR Construction Cost | 1913 = 100 | 611 | 611 | 614 | 615 | **619** |
| ENR Building Cost | 1913 = 100 | 436 | 436 | 437 | 438 | **439** |
| Assoc. Gen. Contractors | 1913 = 100 | 416 | 418 | 420 | **422** | ... |
| Marshall & Stevens | 1926 = 100 | 450 | 452 | **452** | ... | ... |
| American Appraisal* | 1913 = 100 | 583 | 585 | **586** | ... | ... |
| **Weighted price indexes**** | | | | | | |
| Boeckh, comm'l. & mfg | 1926–29 = 100 | 451 | 451 | **446** | ... | ... |
| Smith, Hinchman & Grylls | 1926 = 100 | 500 | 496 | 496 | **498** | ... |
| **Contractor price indexes** | | | | | | |
| Aberthaw*** | 1914 = 100 | 392 | 392 | **393** | ... | ... |
| Austin | 1926 = 100 | 350 | 350 | **350** | ... | ... |
| Fruin-Colnon | 1926 = 100 | 462 | 465 | **463** | ... | ... |
| Fuller | 1913 = 100 | 437# | 445§ | ... | **448** | ... |
| Turner | 1939 = 100 | 502# | 498§ | ... | **487** | ... |

* Adjusted for estimated productivity. # October. § January 1954.
** Includes overhead, profit; adjusted for estimated productivity.
*** Indexes shown are based on 1914 = 100.

# Contractor price squeeze is continuing this year

ENR's quarterly roundup of building costs and prices indexes (table, above) shows that the squeeze on contractors is continuing this year. In general, the various cost indexes are moving up slightly. On the other hand, while the trend of price indexes is mixed, none of them has moved up to any extent and some are moving down.

ENR's Construction Cost and Building Cost Indexes have been pushed up this spring by the new round of wage increases, which are just starting to come in. Most of the new wage contracts will be up for renewal at the end of this month and the end of June. Prices of materials have been quite stable in recent months.

The weighted index of materials and labor costs kept by Associated General Contractors, and the weighted index covering four types of buildings kept by the American Appraisal Co. show the same tendency to move up a little. Only exception is the Marshall & Stevens Index, which was the same for March as it was in December.

• **Price indexes**—The other side of the coin for contractors is price. There are price indexes which measure what they charge for their work, as distinguished from costs of doing the work.

Of the two weighted price indexes, the Boeckh Index for five types of commercial and factory buildings declined about 1% in the first quarter of this year. But the Smith, Hinchman & Grylls Index increased 0.4% during April, after remaining stable during the first quarter.

The five contractor price indexes show trends in actual prices charged for finished work. Only one shows any pronounced change—the Turner Index for April is down a little more than 2% from January. The others show very slight rises or declines in price, or no change.

• **Higher productivity**—One factor which undoubtedly is cushioning profit margins of many contractors is higher labor productivity. Here and there, contractors mention this as a factor in enabling them to lower their bids.

• **Highway bid prices**—The trend in highway bid prices has continued downward during 1954. As measured by the Bureau of Public Roads composite price index, bid prices during the first quarter averaged 3% less than the last quarter of 1953 (chart).

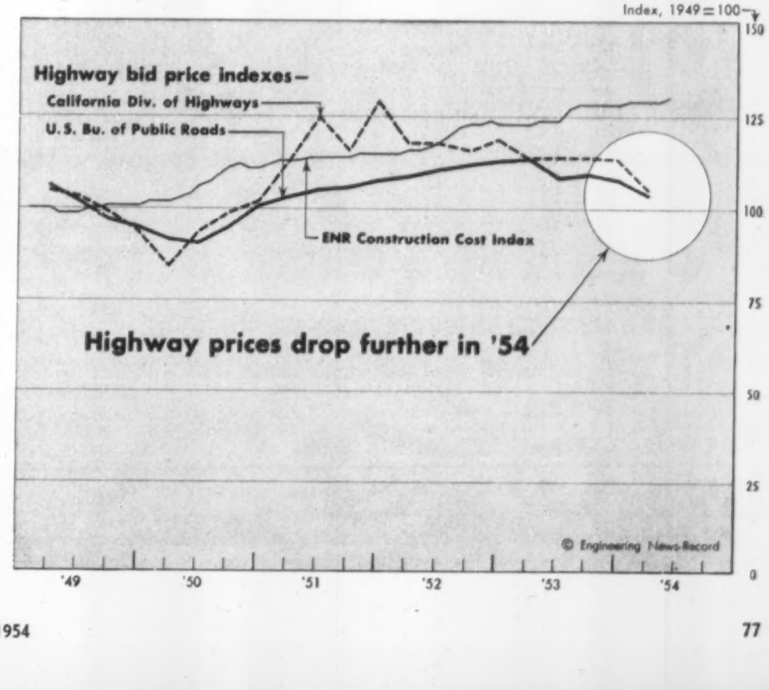
This drop in bid prices started in the second quarter of 1953. It has now brought the index to the lowest point since the first quarter of 1951.

Bids trended lower in the first quarter for all kinds of work, but the biggest decline was in structures and concrete pavement prices.

• **California index**—The California highway construction cost index (also shown on chart) shows an 8% decline in contract prices on state highway and bridge jobs during the first quarter of this year, compared with the last quarter of 1953.

The drop was due to a steady increase in competition among bidders. For instance, last year the average number of bidders rose from 5.5 in January to 7.6 in December. During the first quarter of this year, the average number of bidders was 8.5.

(*B&F continued on page 78*)



# To boost U.S. construction, the Treasury stands aside

### Long-term Massachusetts Turnpike issue sells out fast, while Treasury markets huge issue of short-term notes

Two important but apparently unrelated events took place in the bond market last week. The $239-million Massachusetts Turnpike Authority issue of 40-year bonds—biggest sold so far this year to finance construction—was snatched up by hungry investors. And in one day the U. S. Treasury raised $2 billion in new money by selling an issue of short-term securities.

The Treasury's decision to borrow only for the short term had a definite effect upon the success of the huge turnpike issue. Under the Republicans, one of the Treasury's main objectives is to put as much of the public debt as possible into long-term securities. Most of the public debt comes due within the next few years. Selling long-term bonds would simplify the Treasury's recurrent problem of refunding securities.

The Treasury could have moved toward its goal by offering long-term bonds last week when it had to raise $2 billion in new money to make up the deficit in the federal budget. Instead, it sold notes which will come due in four years, nine months.

• **The reason why**—The reason is this: No one in the Administration wants to risk even a minor business disturbance by borrowing long-term funds. Offering a 20-year security, for instance, would have put the Treasury in competition for investment funds with states and local governments, corporations, and prospective home owners. Washington does not want to cause the postponement of a single local public works project, or delay the smallest industrial expansion program, or make it harder for any would-be home owner to get mortgage money.

This was a major reason why the big Massachusetts issue was an immediate sell-out. A nationwide syndicate of 281 investment houses bought the bonds at a cost to the authority of about 3.36%. The issue was reoffered to investors at par, to yield 3.30% interest. Within a very short time the bonds were selling in the secondary market above par, indicating strong demand.

Expected to be finished in 1956, the road will run 123 mi from a point near Boston to the New York State line. It will have from four to six lanes, and 14 interchanges. Traffic estimates are that passenger cars will provide about 63% of the toll revenues, trucks and buses the rest. About $207 million will be used to build the turnpike, to buy rights of way, pay engineering fees, and so on. The rest goes for interest charges during construction, financing costs, and legal fees.

This week, investors are expected

*(Continued on page 80)*

## Taxable equivalent yields

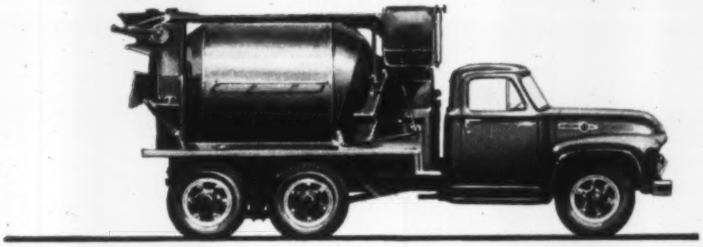
INCOME BRACKETS—THOUSANDS OF DOLLARS

| Tax Exempt Yields | Not Over $2 20% | $2 to $4 22% | $4 to $6 26% | $6 to $8 30% | $8 to $10 34% | $10 to $12 38% | $12 to $14 43% | $14 to $16 47% | $16 to $18 50% | $18 to $20 53% | $20 to $22 56% | $22 to $26 59% | $26 to $32 62% | $32 to $38 65% | $38 to $44 69% | $44 to $50 72% | $50 to $60 75% | $60 to $70 78% | $70 to $80 81% | $80 to $90 84% | $90 to $100 87% | $100 to $150 89% | $150 to $200 90% | Over $200 91% | Corporate Tax Equivalent Yields A | B | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .75 | .94 | .96 | 1.01 | 1.07 | 1.14 | 1.21 | 1.32 | 1.41 | 1.50 | 1.60 | 1.70 | 1.83 | 1.97 | 2.14 | 2.42 | 2.68 | 3.00 | 3.41 | 3.95 | 4.69 | 5.77 | 6.82 | 7.50 | 8.33 | 1.56 | .96 | .75 |
| 1.00 | 1.25 | 1.28 | 1.35 | 1.43 | 1.52 | 1.61 | 1.75 | 1.89 | 2.00 | 2.13 | 2.27 | 2.44 | 2.63 | 2.86 | 3.23 | 3.57 | 4.00 | 4.55 | 5.26 | 6.25 | 7.69 | 9.09 | 10.00 | 11.11 | 2.08 | 1.28 | 1.00 |
| 1.10 | 1.37 | 1.41 | 1.49 | 1.57 | 1.67 | 1.77 | 1.93 | 2.08 | 2.20 | 2.34 | 2.50 | 2.68 | 2.89 | 3.14 | 3.55 | 3.93 | 4.40 | 5.00 | 5.79 | 6.87 | 8.46 | 10.00 | 11.00 | 12.22 | 2.29 | 1.41 | 1.10 |
| 1.25 | 1.56 | 1.60 | 1.69 | 1.79 | 1.89 | 2.02 | 2.19 | 2.36 | 2.50 | 2.66 | 2.84 | 3.05 | 3.29 | 3.57 | 4.03 | 4.46 | 5.00 | 5.68 | 6.58 | 7.81 | 9.62 | 11.36 | 12.50 | 13.89 | 2.60 | 1.60 | 1.25 |
| 1.40 | 1.75 | 1.79 | 1.89 | 2.00 | 2.12 | 2.26 | 2.46 | 2.64 | 2.80 | 2.98 | 3.18 | 3.41 | 3.68 | 4.90 | 4.52 | 5.00 | 5.60 | 6.36 | 7.37 | 8.75 | 10.77 | 12.73 | 14.00 | 15.56 | 2.92 | 1.79 | 1.40 |
| 1.50 | 1.87 | 1.92 | 2.03 | 2.14 | 2.27 | 2.42 | 2.63 | 2.83 | 3.00 | 3.19 | 3.41 | 3.66 | 3.95 | 4.29 | 4.84 | 5.36 | 6.00 | 6.82 | 7.89 | 9.37 | 11.54 | 13.64 | 15.00 | 16.67 | 3.12 | 1.92 | 1.50 |
| 1.60 | 2.00 | 2.05 | 2.16 | 2.29 | 2.42 | 2.58 | 2.81 | 3.02 | 3.20 | 3.40 | 3.64 | 3.90 | 4.21 | 4.57 | 5.16 | 5.71 | 6.40 | 7.27 | 8.42 | 10.00 | 12.31 | 14.55 | 16.00 | 17.78 | 3.33 | 2.05 | 1.60 |
| 1.75 | 2.19 | 2.24 | 2.36 | 2.50 | 2.65 | 2.82 | 3.07 | 3.30 | 3.50 | 3.72 | 3.98 | 4.27 | 4.61 | 5.00 | 5.65 | 6.25 | 7.00 | 7.95 | 9.21 | 10.94 | 13.46 | 15.91 | 17.50 | 19.44 | 3.65 | 2.24 | 1.75 |
| 1.80 | 2.25 | 2.31 | 2.43 | 2.57 | 2.73 | 2.90 | 3.16 | 3.38 | 3.60 | 3.83 | 4.09 | 4.39 | 4.74 | 5.14 | 5.81 | 6.43 | 7.20 | 8.18 | 9.47 | 11.25 | 13.85 | 16.36 | 18.00 | 20.00 | 3.75 | 2.31 | 1.80 |
| 1.90 | 2.38 | 2.44 | 2.57 | 2.71 | 2.88 | 3.06 | 3.33 | 3.58 | 3.80 | 4.04 | 4.32 | 4.63 | 5.00 | 5.43 | 6.13 | 6.79 | 7.60 | 8.64 | 10.00 | 11.87 | 14.62 | 17.27 | 19.00 | 21.11 | 3.96 | 2.44 | 1.90 |
| 2.00 | 2.50 | 2.56 | 2.70 | 2.86 | 3.03 | 3.23 | 3.51 | 3.77 | 4.00 | 4.26 | 4.55 | 4.88 | 5.26 | 5.71 | 6.45 | 7.14 | 8.00 | 9.09 | 10.53 | 12.50 | 15.38 | 18.18 | 20.00 | 22.22 | 4.17 | 2.56 | 2.00 |
| 2.10 | 2.62 | 2.69 | 2.84 | 3.00 | 3.18 | 3.39 | 3.68 | 3.96 | 4.20 | 4.47 | 4.77 | 5.12 | 5.53 | 6.00 | 6.77 | 7.50 | 8.40 | 9.55 | 11.05 | 13.12 | 16.15 | 19.09 | 21.00 | 23.33 | 4.37 | 2.69 | 2.10 |
| 2.25 | 2.81 | 2.88 | 3.04 | 3.21 | 3.41 | 3.63 | 3.95 | 4.25 | 4.50 | 4.79 | 5.11 | 5.49 | 5.92 | 6.43 | 7.26 | 8.04 | 9.00 | 10.23 | 11.84 | 14.06 | 17.31 | 20.45 | 22.50 | 25.00 | 4.69 | 2.88 | 2.25 |
| 2.40 | 3.00 | 3.08 | 3.24 | 3.43 | 3.64 | 3.87 | 4.21 | 4.53 | 4.80 | 5.11 | 5.45 | 5.85 | 6.32 | 6.86 | 7.74 | 8.57 | 9.60 | 10.91 | 12.63 | 15.00 | 18.46 | 21.82 | 24.00 | 26.67 | 5.00 | 3.08 | 2.40 |
| 2.50 | 3.12 | 3.21 | 3.38 | 3.57 | 3.79 | 4.03 | 4.39 | 4.72 | 5.00 | 5.32 | 5.68 | 6.10 | 6.58 | 7.14 | 8.06 | 8.93 | 10.00 | 11.36 | 13.16 | 15.62 | 19.23 | 22.73 | 25.00 | 27.78 | 5.21 | 3.21 | 2.50 |
| 2.60 | 3.25 | 3.33 | 3.51 | 3.71 | 3.94 | 4.19 | 4.56 | 4.91 | 5.20 | 5.53 | 5.91 | 6.34 | 6.84 | 7.43 | 8.39 | 9.29 | 10.40 | 11.82 | 13.68 | 16.25 | 20.00 | 23.64 | 26.00 | 28.89 | 5.42 | 3.33 | 2.60 |
| 2.75 | 3.44 | 3.53 | 3.72 | 3.93 | 4.17 | 4.44 | 4.82 | 5.19 | 5.50 | 5.85 | 6.25 | 6.71 | 7.24 | 7.86 | 8.87 | 9.82 | 11.00 | 12.50 | 14.47 | 17.19 | 21.15 | 25.00 | 27.50 | 30.56 | 5.73 | 3.53 | 2.75 |
| 2.80 | 3.50 | 3.59 | 3.78 | 4.00 | 4.24 | 4.52 | 4.91 | 5.28 | 5.60 | 5.96 | 6.36 | 6.83 | 7.37 | 8.00 | 9.03 | 10.00 | 11.20 | 12.73 | 14.74 | 17.50 | 21.54 | 25.45 | 28.00 | 31.11 | 5.83 | 3.59 | 2.80 |
| 2.90 | 3.62 | 3.72 | 3.92 | 4.14 | 4.39 | 4.68 | 5.09 | 5.47 | 5.80 | 6.17 | 6.59 | 7.07 | 7.63 | 8.29 | 9.35 | 10.36 | 11.60 | 13.18 | 15.26 | 18.12 | 22.31 | 26.36 | 29.00 | 32.22 | 6.04 | 3.72 | 2.90 |
| 3.00 | 3.75 | 3.85 | 4.05 | 4.29 | 4.55 | 4.84 | 5.26 | 5.66 | 6.00 | 6.38 | 6.82 | 7.32 | 7.89 | 8.57 | 9.68 | 10.71 | 12.00 | 13.64 | 15.79 | 18.75 | 23.08 | 27.27 | 30.00 | 33.33 | 6.25 | 3.85 | 3.00 |
| 3.10 | 3.87 | 3.97 | 4.19 | 4.43 | 4.70 | 5.00 | 5.44 | 5.85 | 6.20 | 6.60 | 7.05 | 7.56 | 8.16 | 8.86 | 10.00 | 11.07 | 12.40 | 14.09 | 16.32 | 19.37 | 23.85 | 28.18 | 31.00 | 34.44 | 6.46 | 3.97 | 3.10 |
| 3.25 | 4.06 | 4.17 | 4.39 | 4.64 | 4.92 | 5.24 | 5.70 | 6.13 | 6.50 | 6.91 | 7.39 | 7.93 | 8.55 | 9.29 | 10.48 | 11.61 | 13.00 | 14.77 | 17.11 | 20.31 | 25.00 | 29.55 | 32.50 | 36.11 | 6.77 | 4.17 | 3.25 |
| 3.50 | 4.37 | 4.49 | 4.73 | 5.00 | 5.30 | 5.65 | 6.14 | 6.60 | 7.00 | 7.45 | 7.95 | 8.54 | 9.21 | 10.00 | 11.29 | 12.50 | 14.00 | 15.91 | 18.42 | 21.87 | 26.92 | 31.82 | 35.00 | 38.89 | 7.29 | 4.49 | 3.50 |
| 3.75 | 4.69 | 4.81 | 5.07 | 5.36 | 5.68 | 6.05 | 6.58 | 7.08 | 7.50 | 7.98 | 8.52 | 9.15 | 9.87 | 10.71 | 12.10 | 13.39 | 15.00 | 17.05 | 19.74 | 23.44 | 28.85 | 34.09 | 37.50 | 41.67 | 7.81 | 4.81 | 3.75 |
| 4.00 | 5.00 | 5.13 | 5.41 | 5.71 | 6.06 | 6.45 | 7.02 | 7.55 | 8.00 | 8.51 | 9.09 | 9.76 | 10.53 | 11.43 | 12.90 | 14.29 | 16.00 | 18.18 | 21.05 | 25.00 | 30.77 | 36.36 | 40.00 | 44.44 | 8.33 | 5.13 | 4.00 |
| 4.25 | 5.31 | 5.45 | 5.74 | 6.07 | 6.44 | 6.85 | 7.46 | 8.02 | 8.50 | 9.04 | 9.66 | 10.37 | 11.18 | 12.14 | 13.71 | 15.18 | 17.00 | 19.32 | 22.37 | 26.56 | 32.69 | 38.64 | 42.50 | 47.22 | 8.85 | 5.45 | 4.25 |
| 4.50 | 5.62 | 5.77 | 6.08 | 6.43 | 6.82 | 7.26 | 7.89 | 8.49 | 9.00 | 9.57 | 10.23 | 10.98 | 11.84 | 12.86 | 14.52 | 16.07 | 18.00 | 20.45 | 23.68 | 28.12 | 34.62 | 40.91 | 45.00 | 50.00 | 9.37 | 5.77 | 4.50 |
| 4.75 | 5.94 | 6.09 | 6.42 | 6.79 | 7.20 | 7.66 | 8.33 | 8.96 | 9.50 | 10.11 | 10.80 | 11.59 | 12.50 | 13.57 | 15.32 | 16.96 | 19.00 | 21.59 | 25.00 | 29.69 | 36.54 | 43.18 | 47.50 | 52.78 | 9.90 | 6.09 | 4.75 |
| 5.00 | 6.25 | 6.41 | 6.76 | 7.14 | 7.58 | 8.06 | 8.77 | 9.43 | 10.00 | 10.64 | 11.36 | 12.20 | 13.16 | 14.29 | 16.13 | 17.86 | 20.00 | 22.73 | 26.32 | 31.25 | 38.46 | 45.45 | 50.00 | 55.56 | 10.42 | 6.41 | 5.00 |

Source—The Bond Buyer

THE APPEAL OF TAX-EXEMPT BONDS—This table shows how much interest you would have to get from taxable securities to equal the yield you get from tax-exempts. Start with a taxable yield of, say 3.25%. Run your eye along that line until you reach your income tax bracket. If, for instance, you are in the 62% bracket, you would have to get 8.55% from taxable securities to get 3.25% after taxes. Column A on the right shows the equivalent taxable yield for corporate investors with taxable income over $25,000. Column B shows equivalent yield for such companies on partially tax-exempt government bonds.

ANOTHER WAY YOU SAVE WITH FORD *TRIPLE ECONOMY*

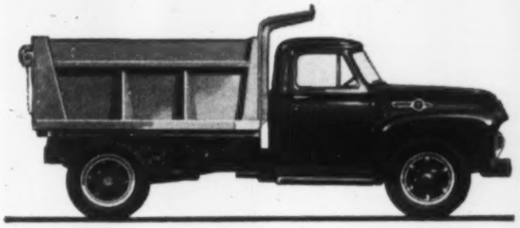


**2 New Tandem Axle Big Jobs . . . up to 3800 lbs. more payload than other make 6-wheelers**

Brand new Ford factory-built T-700 and T-800 six-wheelers rated for 27,000 lbs. and 40,000 lbs. GVW, up to 60,000 lbs. GCW. Powered by Low-Friction V-8's—138-h.p. *Power King* and 152-h.p. *Cargo King* (T-700), 170-h.p. *Cargo King* (T-800).

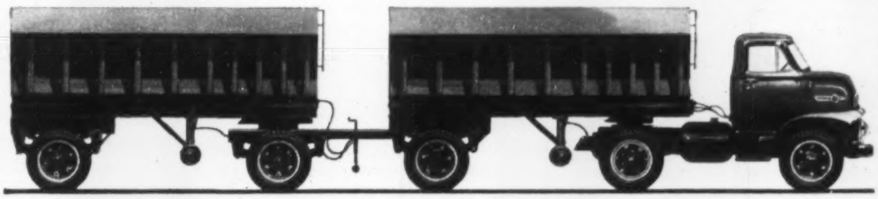
**4 New Conventional Models . . . up to 27,000 lbs. GVW —55,000 lbs. GCW**

New Ford Series F-700, F-750, F-800, F-900 offer body and payload capacities up to 20,117 lbs. Three new Low-Friction V-8's give you gas-saving power, from 138- to 170-h.p., concentrated in 256 to 317 cubic inches displacement.



**4 New Cab Forwards . . . up to 2500 lbs. more payload**

Ford's giant new Cab Forwards, C-700, C-750, C-800, C-900, haul 35-ft. trailers within the legal limit in all states. Rated up to 27,000 lbs. GVW, up to 55,000 lbs. GCW. C-900 handles up to 2500 lbs. more payload than other make cab forwards with 55,000 lbs. GCW.



# '54 Fords go big on BIG JOBS!

**Ten series in Ford's expanded line of new extra heavy duty trucks. New V-8 power up to 170-h.p.! New Master-Guide Power Steering! New money-saving capacities give you another way to save with Ford Triple Economy.**

Now there's a Ford Truck to handle your toughest, heaviest hauling and do it with economy that's new to the extra-heavy-duty field.

New Low-Friction, Overhead-Valve V-8's deliver as much as 44% more power per cubic inch than other truck engines in their class. The fewer cubic inches an engine has, the less gas it usually needs. New Short-Stroke design cuts friction, increases engine life.

New *Master-Guide* Power Steering is standard on T-Series with *Cargo King* engines, optional at worthwhile extra cost on F-Series with *Cargo King* engines. It cuts steering effort up to 75%! Ford's new 3-man *Driverized* Cabs and controls provide comfort and driving ease to help the driver do a better job, faster and with less effort.

For new slants on heavy duty truck economy, call your Ford Dealer *today*, or write: Ford Division, Ford Motor Co., Dept. T-11, Box 658, Dearborn, Mich.

**SAVE WITH *ALL THREE!***

1. New Gas-Saving Power
2. New Driver-Saving Ease
3. New Money-Saving Capacities

**FORD** *TRIPLE ECONOMY* **TRUCKS**

***MORE TRUCK FOR YOUR MONEY!***

to receive favorably a $100-million issue by the State of Connecticut, first installment of about $400 million in financing for the 129-mile Connecticut Thruway. This issue looks more attractive than the Massachusetts issue, since it is secured not only by revenues but by the state's gasoline tax.

• **Why investors buy**—Many buyers of the Massachusetts issue were life insurance companies and pension funds, who were not primarily interested in buying the Massachusetts bonds as tax-exempt investments, since they themselves are more or less exempt from federal income tax. What interested such investors was the fact that the securities were 40-year bonds, and that they offered a 3.30% yield.

The government has not sold long-term bonds for more than a year, (and before that, none since World War II). The supply of new corporate long-term issues has been tapering off this spring as industry completes postwar expansion plans. So life insurance companies and pension funds are eager to find new outlets for their cash. They prefer long-term issues because the yield is higher—a small difference in yield makes a sizable difference in setting up insurance policies and pension plans.

In recent months, life insurance companies have been moving back into the mortgage market in force (ENR May 6, p. 21), but they have been heavy buyers of turnpike issues. Also, pension funds are reported to be buying mortgages for the first time.

• **The tax angle**—However, there were other buyers of the Massachusetts bonds who were interested in the fact that these bonds carried the privilege of tax exemption. To financial institutions which pay the 52% corporate tax rate, like savings banks, this tax-free yield of 3.3% is equal to a taxable yield of about 6.9%.

Where wealthy individuals are concerned, the advantages are much greater. The table (page 78) tells the story. To get the same yield after taxes that he would get from a 3.3% yield on the Massachusetts turnpike bonds, an investor in the 50% tax bracket would have to get a pretax yield of about 6.6% from taxable securities. An investor in the 72% bracket would need almost 11.8%, and one in the top 91% bracket would have to get almost 36.7%.

• **The dark side**—Of course, there is a dark side to almost any pretty picture. One reason why the yield on the turnpike issues has been so attractive is that they are more speculative than municipal bond issues which are backed by the full taxing power of a local government. The Massachusetts bonds, for example, are secured only by toll and concession revenues.

So far, every turnpike issue has been able to meet its debt charges out of net revenue. Many have far exceeded engineers' estimates. But the construction cost of turnpikes is rising. The per-mile cost of the Massachusetts Turnpike will be about as high as any yet built. That means it will have to charge stiff tolls. If further financing proved necessary, this would narrow the margin between debt charges and net revenue. Until a turnpike is built and develops actual earnings experience, its bonds are always somewhat speculative.

Furthermore, there are two future possibilities that could seriously hurt investors in any turnpike bond secured solely by revenues from turnpike users and by concession charges. A serious recession could cut down traffic, by taking some people off the roads entirely and diverting others to free roads. And a national emergency which called for gasoline rationing would hurt turnpike bonds considerably. These are chances which all investors in revenue turnpike issues must take. Those who take the chances consider they are well rewarded by the high yields they get.

## Work in place keeps going at record level for April

New construction activity continued at record levels in April, according to estimates by the Department of Commerce and Labor of work put in place. Total dollar outlays for new work rose about 9% in April to $2.8 billion. Work put in place so far this year totals over $10 billion, slightly above the same period last year.

The March-April rise reflected the usual spring expansion in house building, plus a more-than-seasonal spurt in highway activity. Spending was at peak rates for April on highways, on commercial, religious, and educational building, public utility construction, and on sewer and water facilities.

## Awards pile up biggest total for any week so far this year

During the week ending May 5, contract awards reported to ENR and the Construction Daily racked up the biggest total for any week so far this year. The total was $494 million, of which mass housing contracts alone contributed $240 million.

Private housing contracts are setting an amazing pace. They have averaged $106 million per week for the past 10 weeks. This has pushed the total for the first 18 weeks of 1954 to a record high of $1,468 million, 3% higher than the 1953 record.

Other types of private construction were also up sharply for the May 5 week. Commercial building awards were $43.6 million, biggest week for that fast-moving category in 1954. Industrial contracts were up sharply to $53 million.

Several big housing developments helped make this a record week:

A 2,000-unit development at Fox Lake, Lake Villa, Ill., to cost $40 million.

A 3,500-unit project, including shopping center and schools, at Palma Ceia Village, Hayward, Calif.—also to cost $40 million.

$20 million for housing development and shopping center at Fairfax, Va.

• **State and municipal**—State and local public works are not moving into contract as fast as expected, in spite of an upturn since February. For the first 18 weeks of this year, they are 11% behind 1953. Sewerage is the only major type where contracts are ahead of last year.

## Business briefs . . .

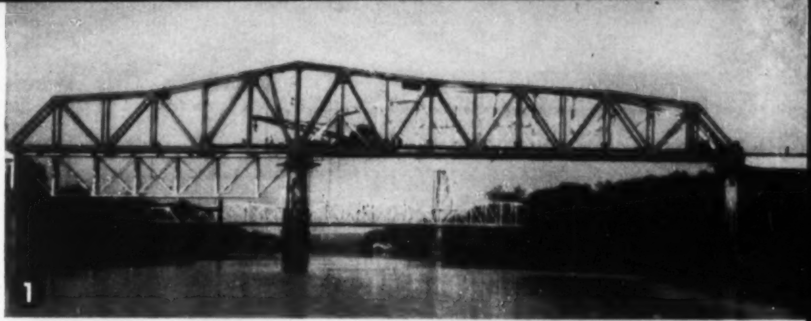
• **Half-billion-dollar plan** – Standard Oil Co. (N. J.) and its affiliates plans $500 million in capital spending this year, according to president M. J. Rathbone.

• **State and municipal bond financing** was up 38% for the first four months, a total of $2.1 billion, according to the Bond Buyer. Much of this money goes into construction. Bond issue approvals by voters total $527 million for the same period, up 71%.

• **Municipal pipelines**—The idea of the municipally financed industrial plant, leased to private industry, has been extended to pipelines. The Arkansas State Public Service Commission is considering a proposal whereby eight towns would build about $949,000 of pipelines and distribution systems and lease them to Mid-South Gas Co. for 20 years with option to buy.

• **Oklahoma canal project,** to cost about $200 million, is being planned. It will be submitted to voters in November.

# Traffic delayed only 31 hours on this unusual bridge replacement job!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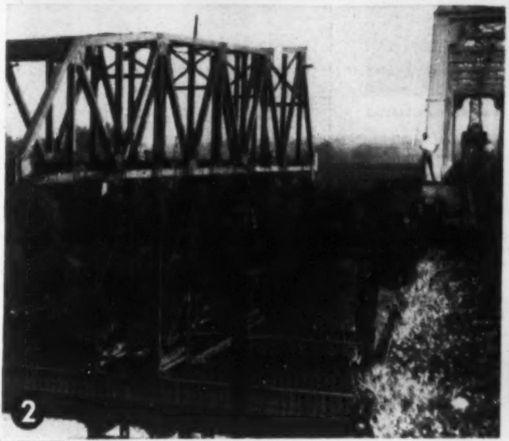
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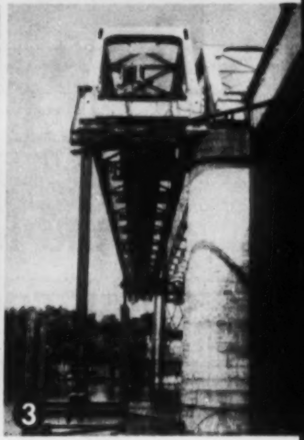
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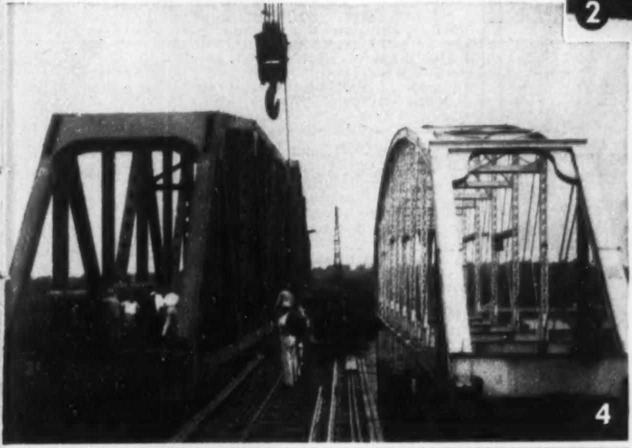
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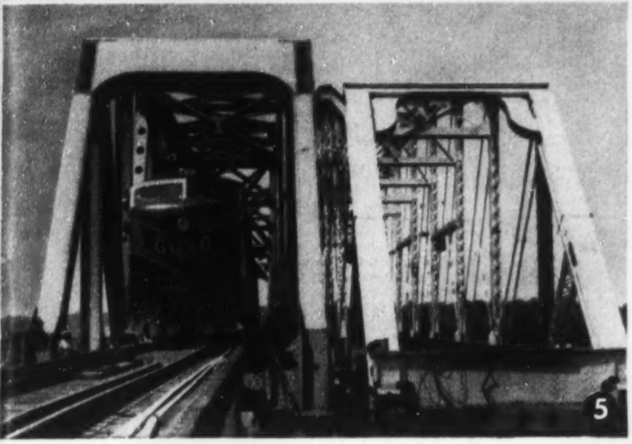
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## AMERICAN BRIDGE

### floats new bridge onto old piers to give GM&O RR fast service!

THE replacement of the Gulf, Mobile and Ohio Railroad Company's bridge over the Warrior River at Tuscaloosa, Alabama, with a new structure on the existing piers is another good example of how American Bridge handles a difficult job.

The project involved the design, fabrication and erection of the 450-foot bridge (consisting of a 275′ anchor span, a 58′4″ cantilever arm, and a 116′8″ suspension span) on the original piers, and the removal of the old, out-moded bridge.

The entire new bridge (picture #1) was erected on two barges (picture #2) and floated into a temporary position on pier extensions alongside the old structure (picture #3). The old bridge was then moved off its piers (picture #4) and the new bridge rolled onto the existing piers with new rails, crossties and new timbers in place (picture #5).

The changeover was accomplished with a traffic interruption of only thirty-one hours!

Handling unusual jobs like this with such ease and speed has made American Bridge the country's number one builder of railroad bridges. Whether your requirements are for a new line structure, or for an emergency repair or replacement job, American Bridge welcomes your inquiries.

**AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION · GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.**

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

# AMERICAN BRIDGE

UNITED STATES STEEL

PHOTOGRAPH BY RICHARD BEATTIE

What are the facts about cancer of the lung—?

JUST 20 YEARS AGO, in 1933, cancer of the lung killed 2,252 American men. Last year, it killed some 18,500.

WHY THIS STARTLING INCREASE? Our researchers are finding the answers as rapidly as funds and facilities permit —but there isn't enough money.

DOCTORS ESTIMATE that 50% of all men who develop lung cancer could be cured if treated in time. But we are actually saving only 5% . . . just one-tenth as many as we should.

WHY—? Many reasons. But one of the most important is not enough money . . . for mobile X-ray units, for diagnosis and treatment facilities, for training technicians and physicians.

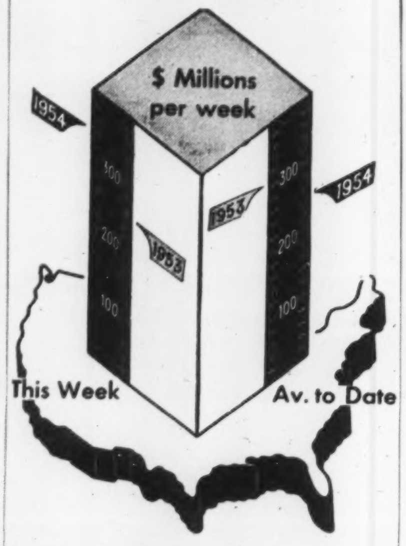
THESE ARE JUST A FEW of the reasons why *you* should contribute generously to the American Cancer Society. Won't you please do it now? *Your* donation is needed—and urgently needed—for the fight against cancer is *everybody's* fight.

Cancer
MAN'S CRUELEST ENEMY
Strike back—Give

AMERICAN CANCER SOCIETY
GENTLEMEN:
☐ Please send me free information on cancer.
☐ Enclosed is my contribution of $........ to the cancer crusade.
Name..........................
Address..........................
City.............State.............
Simply address the envelope: CANCER c/o Postmaster, Name of Your Town

## Activity This Week

As reported to ENR
(In millions of dollars)



### Amount of contracts let

| | This Week | Cumulative 19 wks 1954 | Cumulative 19 wks 1953 | % chge |
|---|---|---|---|---|
| Federal .... | $34.7 | $370.9 | $565.1 | —34 |
| State and municipal .. | 109.0 | 1,601.3 | 1,764.7 | —9 |
| Total pub... | 143.7 | 1,972.2 | 2,329.8 | —15 |
| Total priv... | 200.4 | 2,771.8 | 3,426.6 | —19 |
| **U. S. total..** | **$344.1** | **$4,744.0** | **$5,756.4** | **—18** |

### Contracts by type of work

| | This Week | 1954 | 1953 | % chge |
|---|---|---|---|---|
| Waterworks . | $12.7 | $82.3 | $92.1 | —11 |
| Sewerage ... | 5.1 | 136.6 | 135.0 | +1 |
| Bridges .... | 4.7 | 137.6 | 227.5 | —40 |
| Highways .. | 52.3 | 574.9 | 570.5 | +1 |
| Earthwork, waterways . | 10.2 | 106.0 | 130.8 | —19 |
| Buildings: | | | | |
| Public, excl. hsg. ...... | 30.5 | 580.3 | 603.0 | —4 |
| Housg., pub. | 4.7 | 68.6 | 243.1 | —72 |
| Housg., priv. | 74.5 | 1,542.4 | 1,516.7 | +2 |
| Commercial | 23.9 | 450.0 | 356.1 | +26 |
| Industrial . | 96.7 | 670.0 | 1,256.0 | —47 |
| Unclassified . | 28.8 | 395.3 | 625.6 | —37 |
| **Total .....** | **$344.1** | **$4,744.0** | **$5,756.4** | **—18** |

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

### New capital for construction

| (millions of dollars) | Week of May 6 1954 | Cumulative 18 Wks 1954 | % chge 1953-54 |
|---|---|---|---|
| Corporate securities | $44.8 | $1,079.7 | —23 |
| State and municipal | | | |
| All except housing | 76.9 | 1,712.3 | +36 |
| Housing ........ | ... | 42.6 | —77 |
| Federal loans ..... | 1.2 | 44.3 | —9 |
| Federal aid ....... | ... | ... | ... |
| **Total non-federal..** | **$122.8** | **$2,879.0** | **—0.4** |
| Federal approps.: | | | |
| In U. S......... | ... | ... | ... |
| Outside U. S.... | ... | ... | ... |
| **Total new capital..** | **$122.8** | **$2,879.0** | **—0.4** |

### ENR indexes

| | | Base years = 100 1913 | 1926 | 1949 |
|---|---|---|---|---|
| **Constr.** | ..**May '54** | **618.69** | **297.40** | **129.70** |
| **cost** | ...Apr '54 | 615.36 | 295.80 | 129.00 |
| **Bldg.** | ...**May '54** | **438.69** | **237.14** | **124.70** |
| **cost** | ...Apr '54 | 437.94 | 236.74 | 124.49 |
| **Volume** | ..**Apr '54** | **517** | **210** | **149** |
| | Mar '54 | 426 | 173 | 123 |

## OFFICIAL PROPOSALS

Bids: June 15, 1954

### *River Intake & Pumping Station; Water Treatment Plant; Water Supply Line*

Correction of Contracts I and II Price per set

1. SEALED BIDS for furnishing all materials and equipment and doing all work required for the construction of the following at WINCHESTER, VIRGINIA, will be received by the Common Council in Council Chambers, City Hall, Winchester, Virginia, until 2:00 P.M. on June 15, 1954, and there publicly opened and read immediately thereafter:

CONTRACT I. River Intake Works & Raw Water Pumping Station
CONTRACT II. Water Treatment Plant
CONTRACT III-A. 24-Inch Supply Line (Section A)
CONTRACT III-B. 24-Inch Supply Line (Section B)

2. The principal items of work will include the following:

CONTRACT I: Approximately 5,000 cu. yds. of excavation; 800 cu. yds. concrete (including 160 foot long sill across the Shenandoah River); 570 feet of 36" intake line; 1200 feet of 24-inch force main; 25 tons of C.I. pipe and fittings; water screen, pumping equipment, valves, sluice gates, superstructure work, electrical work and miscellaneous equipment.

CONTRACT II: Approximately 14,500 cu. yds. of excavation; 2900 cu. yds. of concrete; 2650 feet of 24-inch force main; 140 tons of C.I. pipe and fittings; valves, sluice gates, superstructure work, electrical work, pumps and motors; filter media, equipment and accessories for six 20 x 24 feet rapid sand filters, and miscellaneous equipment.

CONTRACT III-A: Approximately 39,000 feet of 24-inch supply line, and miscellaneous valves, fittings and appurtenances.

CONTRACT III-B: Approximately 42,000 feet of 24-inch and 3,600 feet of 12-inch supply line, and miscellaneous valves, fittings and appurtenances.

3. Copies of Plans and Specifications, Information For Bidders, Bid Forms and other bidding and contract documents may be examined at the City Manager's Office, City Hall, Winchester; at Dodge Reports, 900 F St., N.W., Washington, D.C., and examined or obtained at the Office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH STREET, NEW YORK 7, N. Y. upon the following Deposits:

CONTRACT I: Fifty Dollars ($50.00) Per Set
CONTRACT II: Eighty-Five Dollars ($85.00) Per Set
CONTRACT III-A & CONTRACT III-B Forty Dollars ($40.00) Per Set for Both Contracts

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

4. All bids must be on the form contained in the Contract and Specifications.

5. Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

6. All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the City Treasurer, as bid security.

7. The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

8. No bidder may withdraw his bid within Thirty (30) Days after actual date of opening thereof.

9. The Common Council of Winchester, reserves the right to reject any or all bids, and to waive any informality in the bid.

CITY OF WINCHESTER, VIRGINIA
By: S. LEE GRANT, CITY MANAGER
Dated: May 1, 1954.

Bids: May 20, 1954

## New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 20th. day of May 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

| County | Contract No. | Name | Miles | Type | Deposit | Cost of Work Estimated |
|---|---|---|---|---|---|---|
| DISTRICT No. 4, E. G. H. YOUNGMANN, District Engineer, Barge Canal Terminal, Rochester, N. Y. | | | | | | |
| Ontario | FARC54-64 | Geneva-Lyons, Pt. 2, S.H. 5252 Project No. F1013(2) | 3.94 | 9" Cem. Conc. Pavt. 24' Wide | $41,000<br>Plans $15 | $734,000 |
| DISTRICT No. 5, C. R. WATERS, District Engineer, 65 Court Street, Buffalo, N. Y. | | | | | | |
| Erie | NT54-1<br>ST54-1<br>GISP54-2 | New York State Thruway<br>Niagara Section-Sub. N8<br>(South Grand Island Bridge to North Grand Island Bridge) South Bridge Interchange; Access Drives; 7 Misc. Marginal Roads and Cross Roads; West River Parkway | (Acc.= 8.19)<br>5.13 | 9" Two Crse. Cem. Conc. Pavt. 2 at 25' Wide = 9.88 Mi. Asph. Conc. Opt.= 3.38 Mi. Misc. Work = 0.06 Mi. 7 Hy. Seps. Comp. I-Beams 381.8', 228', 220', 211.2', 199.8', 213.7' & 274.6' | $275,000<br>Plans $100 | 4,948,000 |
| DISTRICT No. 8, J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y. | | | | | | |
| Westchester | FA SWC54-2<br>FA ST 54-28 | New York State Thruway......................<br>Southern Westchester Conn. Sub. 11 (New York City Line-Tuckahoe Road, Pt. 1); 11 Ramps; 11 Misc. Marginal, Service & Access Roads Proj. No. UI-I-1100(1) Cont. 2 | (Acc.= 9.54)<br>(Thy. —2.94) | 9" Cem. Conc. Pavt. 2 at 37' Var. Wide = 3.00 Mi. 9" Unreinf. Cem. Conc. Pavt. Var. Wide = 8.88 Mi. Asph. Conc. Opt.= 0.60 Mi. 7 Hy. Seps. Comp. I-Beams 80.6', 110.6', 341.8' 110.6', 109', 193.3' and 307.8' 1 Hy. Sep. Comp Girder 93.6' | $990,000<br>Plans $100 | 17,921,000 |
| DISTRICT No. 10, M. E. GOUL, Dist. Engr., Montauk Hwy. at Little EastNeck Rd., Babylon, L. I., N. Y. | | | | | | |
| Bronx | FA CBE54-1 | Cross Bronx Expressway Contract 9B and 9X Project No. UI 1084(19) | 2.32 | 9" Col. Cem. Conc. Pavt. 2 at 36' Wide = 0.22 Mi. Grad., Drain., Pav., Lighting, Roadside Develop., Playgrounds; Signs & Misc. Work = 2.10 Mi. 1 Hy. Sep. Plate Girder 312.6' 2 Hy. Seps., Misc. Work | $100,000<br>Plans $50 | 1,714,000 |
| Bronx | FA MDE54-3 | Major Deegan Expressway Extension Cont. 6 Project No. UI-1082(18) | 0.95 | 9" Cem. Conc. Pavt. 2 at 36' Wide = 0.91 Mi. Misc. Work = 0.04 Mi. | 60,000<br>Plans $25 | 1,084,000 |

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Deparmtent of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Propoasl Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed wtih federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

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Bids: May 26, 1954

## Construction of Grading, Drainage, Structures and Paving

OHIO TURNPIKE COMMISSION
139 East Gay Street
Columbus 15, Ohio
NOTICE TO BIDDERS
Contract C-23A

Sealed proposals will be received by the Ohio Turnpike Commission until 10:00 A. M., Eastern Standard Time, May 26, 1954, for the performance of Contract C-23A.

The work covered by the Contract consists generally of the construction of grading, drainage, structures and paving of approximately 2.75 miles, being a part of Construction Section 23 of Ohio Turnpike Project No. 1, beginning at a point about 1437 feet west of State Route No. 301 at Turnpike Centerline Station 720+00 in Lorain County and extending eastwardly to a point about 4,680 feet southeast of U. S. Route No. 20 at Turnpike Centerline Station 865+00 in Lorain County, and the construction of an Engineer's office building and facilities on or near the site of the work.

The principal structures to be built are one reinforced concrete box culvert, two single bridges and five twin bridges (each twin bridge consisting of two separate but nearly identical and parallel structures). Six of the bridges are steel beam bridges of three to five spans each and one of the bridges is a girder bridge of three spans, all supported on reinforced concrete abutments and bents. The abutments of five bridges are to be on steel piles, and the abutments of two bridges are to be on spread footings. The bents of all bridges are to be on spread footings.

Approximate quantities of the major items of construction are as follows:

| | |
|---|---|
| Roadway Excavation .... | 680,000 cubic yards |
| Borrow .......... | 202,000 cubic yards |
| Structural Concrete | 10,000 cubic yards |
| Reinforcing Steel.. | 1,513,000 pounds |
| Fabricated Structural Steel. | 2,180,000 pounds |
| 10" Reinforced Concrete Pavement.. | 74,000 square yards |

Copies of the Plans and General Specifications for said Contract will be available on and after May 4, 1954 for public inspection or purchase at the office of the Chief Engineer, Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

| | |
|---|---|
| General Specifications for Ohio Turnpike Project No. 1.......... | $ 5.00 |
| Plans (also soil profiles and boring logs)............... | 15.00 |
| Cross Sections .................. | 25.00 |

Forms or copies of all remaining Contract Documents, including the Proposal for the above Contract; the Affidavit which must accompany the Proposal; this Notice to Bidders; the Special Provisions applying to said Contract; the Contract to be entered into with the successful Bidder; and the Contract Bond to be furnished with such Contract, will be furnished upon request and without charge to any interested person at the aforesaid Chief Engineer's office, on and after May 11, 1954.

All proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

The Proposal must be accompanied by a certified check or checks on a solvent bank or banks, payable to the order of the Ohio Turnpike Commission in an amount not less than $100,000. The Commission may at any time cash any such check. Each such check or the proceeds thereof will be held by the Commission as a guaranty that, if any Proposal guaranteed thereby is accepted, a Contract will be entered into and the performance of the Proposal secured. Each such check or the proceeds thereof will be returned or forfeited as provided in paragraphs G-3.03 and G-3.06 of the aforesaid General Specifications.

All bids must be received at or before 10:00 A. M., Eastern Standard Time, May 26, 1954, in the offices of the Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. At said hour, the bid box will be removed to the Neil House Hotel, 41 South High Street, Columbus, Ohio, where all proposals will be publicly opened and read.

The award of the Contract, if any award be made, will be to the Bidder whose Proposal is lowest and best for the performance of the work, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

OHIO TURNPIKE COMMISSION

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Bureau of Reclamation, North Platte River District 42354-P9, Casper, Wyoming. For Immediate Release April 23, 1954. UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-338 for furnishing labor and materials and performing all work for Brown's Canyon Drain, Drop Structure "A", North Platte Project, Wyoming-Nebraska, will be mailed to P. O. Box 280, Casper, Wyoming or delivered to the office of the Bureau of Reclamation in time for the public opening at 10:30 a.m., Mountain Standard Time, May 25, 1954, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: R. J. Walter, Jr., Regional Director, Building 46, Denver Federal Center, Denver, Colorado: and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications furnished for bidding purposes; for all others $0.25 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

I. J. Matthews
District Manager

## U. S. Government

Department of Commerce, Bureau of Public Roads, April 29, 1954. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T., May 25, 1954, for Project 1A12, Baltimore-Washington Parkway, District of Columbia and Prince Georges County, Maryland. 0.653 mile, Grading, Asphalt Paving and other work, Approaches to Anacostia River Bridge. The approximate quantities of the more important items are: 272,650 cu. yd. Borrow, 4,100,000 sta. yd. Overhaul, 8,450 cu. yd. Gravel Base Course, 3,600 tons Hot Asphalt Concrete Base Course and 2,400 tons Hot Asphalt Concrete Pavement. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above. H. J. Spelman, Division Engineer.

## OFFICIAL PROPOSALS

Bids: May 21, 1954

### Sewage Treatment Plant & Accessories

NOTICE TO CONTRACTORS
CHARLESTON SEWER IMPROVEMENTS,
PROJECT WVA 46-P-4
UNIT ONE: SEWAGE TREATMENT
PLANT & ACCESSORIES
CHARLESTON, W. VA.

The Sanitary Board of The City of Charleston, Charleston, West Virginia, will receive sealed bids for "Unit One: Sewage Treatment plant and Accessories" until 2 P.M. Eastern Standard Time on the 21st day of May, 1954, at the office of the Sanitary Board, Room 15, City Building, at which time and place all bids will be publicly opened and read aloud.

The successful bidder will be required to furnish a satisfactory performance bond in the amount of 100 percent of contract.

Liquidated damages for delay will be One Hundred Dollars ($100.00) per day for each calendar day beyond the date specified in the contract.

The contract documents, including plans and specifications are on file at the office of the Sanitary Board, City Building, Charleston, West Virginia, and at the office of Settle Engineers, Inc., 2nd Floor Peoples Building, Charleston, West Virginia, where they may be examined free of charge.

Copies of the documents may be obtained by depositing Forty Dollars ($40.00) with Settle Engineers, Inc., 2nd Floor Peoples Building, Charleston, West Virginia, for each set of documents so obtained. The amount of the deposit for one (1) set of documents will be refunded to each actual bidder who returns the plans and documents in good condition within five (5) days after the opening of the bids.

The Sanitary Board of The City of Charleston reserves the right to reject any or all bids and to waive any informalities in bidding.

A certified check or cashier's check, payable to The Sanitary Board of The City of Charleston, West Virginia, or a satisfactory bid bond executed by the bidder and a surety company authorized to do business in West Virginia, in an amount of dollars at least equal to five per cent (5%) of the bid or an equal amount of U. S. Government Bonds, shall be submitted with each bid.

No bid may be withdrawn after the scheduled closing time for receipt of bids, for at least thirty (30) days.

THE SANITARY BOARD OF THE
CITY OF CHARLESTON
By: F. Duane Hill, Secretary
Date: April 22, 1954

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Bids: May 21, 1954

### City of Charleston, West Virginia

The City of Charleston, West Virginia will receive bids May 21st on the following units of a 6 M.G.D. Primary Sewage Treatment Plant.

Grit Removal Unit
2 Primary Settling Tanks
2 Digestion Tanks
Digestion Control Building
Administration Building
Sludge Pumping Station
Chlorination Building
Yard Piping, River Outlets, Etc.
Covered Sludge Beds.

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Bids: May 25, 1954

### Contract 430

ELECTRICAL CONTROL EQUIPMENT, ETC.

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M. Eastern Standard Time, on Tuesday, May 25, 1954, for Contract 430, for furnishing, testing and delivering electrical control equipment, complete, with all necessary appurtenances, for the operation of the motor-operated valves of the Neversink intake and outlet chambers, the East Delaware outlet chamber and the Downsville release water chamber, of the Delaware system, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of two thousand dollars ($2,000.00) for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1316 at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

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Bids: June 30, 1954

### Construction of Grain Terminal

CONSTRUCTION OF GRAIN STORAGE &
HANDLING PLANT

The Corporació de Defensa de Productos Agrícolas, an instrumentality of the Republic of Colombia, S. A., will receive sealed competitive bids at its principal office in Bogotá, Colombia, until 4 P. M. Eastern Standard Time on the 30th day of June, 1954, for the immediate construction of an Import-Export Grain Terminal, incorporating marine handling facilities, etc. at Cartagena, in the Republic of Colombia, S. A.

Formal bidding documents, Plans and Specifications, and General Conditions of the Construction Contracts may be inspected by qualified prospective bidders at the offices of the Consulting Engineers for the Corporación, Drying Plant Engineers, Inc., 1001 Connecticut Avenue, N. W. Washington, D. C. and Carrera 8A, No. 15-43, Piso 11, Bogotá, Colombia, after May 10, 1954.

Persons other than qualified prospective bidders for the construction work in the opinion of the Corporación may obtain copies of the bidding documents upon payment of U. S. 100.00, or if they are Colombian firms, upon payment of Col. $100.00.

The type of construction for the structures will be reinforced concrete, prefabricated steel, or a combination of the two materials. The work will include furnishing all materials, equipment and services for a complete plant, ready to operate, at Cartagena and the work will include pile foundations, dock, marine bulkhead and dredging.

Bids shall be for the total requirements of the project but the Corporación reserves the right to reject any or all bids or to award the work or any divisible part to any one or more bidders.

Interested prospective bidders may address inquiries for further information either to the Corporación or to the Consulting Engineers.

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Bids: June 8, 1954

1949

**New Jersey**
**Turnpike**
**Authority**

### Contracts No's. GR-13A, GR-13B, GR-13C and GR-13D

Sealed proposals are invited for Contracts No's. GR-13A, GR-13B, GR-13C and GR-13D which involve respectively the general construction, the plumbing and drainage, the heating and ventilating and the electrical work in connection with the completion of a Maintenance Building for Maintenance Division No. 1 located on the New Jersey Turnpike at Swedesboro, Salem County, New Jersey.

Sealed proposals will be received at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, on the morning of June 8, 1954, until 11:00 A. M., Eastern Daylight Saving Time, at which time and place said proposals will be publicly opened and read.

The receipt and opening of proposals are subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority.

Contract documents may be examined during office hours after May 17, 1954, at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey. Contract documents will be furnished upon deposit of Fifteen Dollars ($15.00) for each set, upon application to the Authority. The deposit will be refunded if the contract documents are returned in good condition to the Authority within fifteen (15) days after receipt of proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman
May 13, 1954

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Bids: May 20, 1954

### Furnishing Cast-Iron Pipe and Fittings

CONSOLIDATED WATER DISTRICT
NO. 1 OF THE TOWN OF
GREENBURGH, N. Y.
WATER WORKS IMPROVEMENTS
CONTRACT NO. 3

Sealed bids for the furnishing and delivery of cast-iron pipe and fittings, 6-inch to 24-inch in diameter, will be received by the Town Board of the Town of Greenburgh on behalf of Consolidated Water District No. 1 of the Town of Greenburgh at the Board Rooms of said Board in the Lyceum Building, Broadway and Central Avenue, Tarrytown, N. Y., until 2:00 p.m., Thursday, May 20, 1954.

Plans and specifications may be examined and bidding sheets obtained at the office of the Commissioner of Public Works, Lyceum Building, Tarrytown, N. Y., or at the office of Hazen and Sawyer, Engineers, 110 East 42nd Street, New York 17, N. Y. A set of the specifications and contract documents may be obtained by depositing $10 at either of the above offices. The deposit will be refunded in full to those who submit bids or return the specifications in good condition within two weeks after the date of opening bids.

No bid may be withdrawn for at least thirty (30) days after the scheduled closing time for the receipt of bids. The Town Board, acting on behalf of the Consolidated Water District No. 1, reserves the right to reject any or all bids or to accept any bid deemed to be in the best interests of the Consolidated Water District No. 1.

By order of the Town Board of the Town of Greenburgh:
ELIZABETH C. SMITH, Town Clerk
Dated: April 29, 1954
Tarrytown, N. Y.

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Bids: June 25, 1954

### For Sale: Floating Equipment by Panama Canal Co.

Sealed bids for the purchase of U. S. WOLCOTT, U. S. LIMON, and other items of barges, launches, and quarterboat, offered for sale under Invitation 80 by Panama Canal Company will be received until 10:30 A.M., June 25, 1954 and at that time publicly opened in the office of Procurement Officer, Panama Canal Company, 24 State Street, New York 4, N. Y.

The U. S. WOLCOTT, originally a Coast Guard cutter, rebuilt in 1938, was re-engined in 1947 with 2—F-M, 2 cycle, 6 cylinder, 180 HP diesel engines and 1 Superior 6 cylinder, 4 cycle, 60 HP engine. It is riveted steel construction and the hull is in excellent condition. The overall length is 100 feet; beam 23 feet; draft 8 feet, 6 inches; displacement 210 long tons. It is equipped with 2—10 KW generator sets, 1 Brunner ice machine and a completely furnished galley with oil burning galley range, stainless steel walk-in refrigerator, tile deck.

The luxurious appointments consist of walnut veneer paneled dining salon, owner's cabin and lounge, private cabin with bath forward for owner, 3 double cabins for passengers, 1 master's cabin aft of pilot house, 1 chief engineer's cabin, crew space for 4 persons.

The general overall condition is better now than at the time of our acquisition in 1951.

Here is a very low cost fire and police boat with excellent living quarters practically new engines, and ample auxiliary power. This boat is also suitable for use as a tug boat in waters where the current and tide are less than 4 knots.

With minor changes it could be adapted to sport finishing service. The third screw could be a fuel saver during trolling.

The U. S. LIMON was built in 1942. Welded steel construction, overall length 100 feet; beam 25 feet, 3¼ inches; mean draft 10 feet, 10 inches; displacement 390 long tons. Main engine 6 cylinder F-M 1050 HP direct drive to propeller; Appointments: 2 cabins, crew space for 10. Galley: standard for tug boats. Hull is in excellent condition. This boat is suitable for use as a tug boat or harbor tow boat.

Details concerning these ships and the floating equipment offered under this invitation may be obtained along with bid forms, by application to Procurement Officer, Panama Canal Company, 24 State Street, New York 4, N. Y.

Bids: May 20, 1954

## New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Atricle 2, Title 9 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 20th day of May 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following project in Seneca County.
William Robinson, District Engineer, Weigh Lock Bldg., Syracuse, N. Y.

| Contract No. | Type | Name of Highway and Miles | Deposit for Plans | Bid Deposit | Department Estimate |
|---|---|---|---|---|---|
| O.T. 54-1………… | **Grading Paving & Misc. Work** | New York State Thruway-Ontario Sect. Sub.1 Restaurant & Gas Station Site (Junius **Pounds)** | **$10** | **$10,000** | **$187,000** |

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

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Bids: June 8, 1954

## New Jersey Turnpike Authority

## Contracts No's. GR-14A, GR-14B, GR-14C and GR-14D

Sealed proposals are invited for Contracts No's. GR-14A, GR-14B, GR-14C and GR-14D which involve respectively the general construction, the plumbing and drainage, the heating and ventilating and the electrical work in connection with the completion of a Maintenance Building for Maintenance Division No. 4 located on the New Jersey Turnpike in Milltown, Middlesex County, New Jersey.

Sealed proposals will be received at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, on the morning of June 8, 1954, until 11:00 A.M., Eastern Daylight Saving Time, at which time and place said proposals will be publicly opened and read.

The receipt and opening of proposals are subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority.

Contract documents may be examined during office hours after May 17, 1954, at the office of the New Jersey Turnpike Authority, **Administration Building**, New Brunswick, New Jersey. Contract documents will be furnished upon deposit of Fifteen Dollars ($15.00) for each set, upon application to the Authority. The deposit will be refunded if the contract documents are returned in good condition to the Authority within fifteen (15) days after receipt of proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman
May 13, 1954

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### U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4172) will be received at Ogden, Utah, until June 15, 1954, for furnishing labor and materials for earthwork, plate steel pipe lines, and structures, including bifurcation structure, Sta. 8+36.82 to Sta. 935+05, Davis Aqueduct, Weber Basin Project, Utah. Location south of Ogden, Utah, in Davis County. Principal items are: furnishing, laying, and testing approximately 18 miles of plate steel pipe lines, 48-inch to 84-inch diameter; 544,300 cu. yds. excavation; 4,500 cu. yds. concrete; and other work. The work is divided into 3 schedules. Completion time 1050 days. For particulars, address Bureau of Reclamation, Ogden, Utah; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

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Bids: June 14, 1954

## Construction of Grain Storage & Handling Plants

REQUEST FOR BIDS

The Corporación de Defensa de Productos Agrícolas, an instrumentality of the government of the Republic of Colombia, S. A., will receive sealed competitive bids in duplicate at its principal office in Bogotá, Colombia, until 4 P.M. Eastern Standard Time on the 14th day of June, 1954, for the immediate construction of additional grain storage and handling plants at Pasto and El Banco in the Republic of Colombia, S. A.

Formal bidding documents, Plans and Specifications, and General Conditions of the Construction Contracts may be inspected by qualified prospective bidders at the offices of the Consulting Engineers for the Corporación, Drying Plant Engineers, Inc., 1001 Connecticut Avenue, Washington, D. C. and Carrera 15-43, Piso 11, Bogotá, Colombia, after April 26, 1954.

Persons other than qualified prospective bidders for the construction work in the opinion of the Corporación may obtain copies of the bidding documents upon payment of U. S. $100.00 or if they are Colombian firms, upon payment of Col. $100.00.

The type of construction for the structures will be reinforced concrete, prefabricated steel, or a combination of the two materials; at Pasto and El Banco the work will include furnishing all materials, equipment and services for complete plants ready to operate.

Bids shall be for the total requirements of one or both of the two plants but the Corporación reserves the right to reject any or all bids or to award the work of any divisible part to any one or more bidders.

Interested prospective bidders may address inquiries for further information either to the Corporación or to the Consulting Engineers.

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### U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4171) will be received at Ogden, Utah, until June 15, 1954, for furnishing labor and materials for earthwork, concrete pipe lines, and structures, including bifurcation structure, Sta. 8+36.82 to Sta. 935+05, Davis Aqueduct, Weber Basin Project, Utah. Location south of Ogden, Utah, in Davis County. Principal items are: furnishing, laying, and testing approximately 18 miles of reinforced concrete pipe lines, 48-inch to 84-inch diameter; 621,000 cu. yds. excavation; 4,500 cu. yds. concrete; and other work. The work is divided into 3 schedules. Completion time 1050 days. For particualrs, address Bureau of Reclamation, Ogden, Utah; or Biulding 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

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Bids: May 20, 1954

## Furnishings Valves and Hydrants

CONSOLIDATED WATER DISTRICT
NO. 1 OF THE TOWN OF
GREENBURGH, N. Y.
WATER WORKS IMPROVEMENTS
CONTRACT NO. 4

Sealed bids or the furnishing and delivery of valves and hydrants will be received by the Town Board of the Town of Greenburgh on behalf of the Consolidated Water District No. 1 of the Town of Greenburgh at the Board Rooms of said Board in the Lyceum Building, Broadway and Central Avenue, Tarrytown, N. Y., until 2:00 p.m., Thursday, May 20, 1954.

Plans and specifications may be examined and bidding sheets obtained at the office of the Commissioner of Public Works, Lyceum Building, Tarrytown, N. Y., or at the office of Hazen and Sawyer, Engineers, 110 East 42nd Street, New York 17, N. Y. A set of the specifications and contract documents may be obtained by depositing $10 at either of the above offices. The deposit will be refunded in full to those who submit bids or return the specifications in good condition within two weeks after the date of opening bids.

No bid may be withdrawn for at least thirty (30) days after the scheduled closing time for the receipt of bids. The Town Board, acting on behalf of the Consolidated Water District No. 1, reserves the right to reject any or all bids or to accept any bid deemed to be in the best interests of the Consolidated Water District No. 1.

By order of the Town Board of the Town of Greenburgh:
ELIZABETH C. SMITH, Town Clerk
Dated: April 29, 1954
Tarrytown, N. Y.

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Bids: May 24, 1954

## Furnishing and Installing Sirens

GOV. OF DIST. OF COL., DEPT. OF HIGHWAYS, April 26, 1954. SEALED PROPOSALS will be recd. in Rm. 404, 499 Pa. Ave., N.W., Wash. 1, D. C., until 2 PM, DST, May 24, 1954, and then publicly opened and read for furnish. and install. approx. thirteen (13) Gasoline-Engine-Driven Electrical and Radio Actuated and Controlled Air Raid Sirens on the Roofs of Existing Bldgs. at var. locations in D.C. Proposal forms, plans and specns. obtainable, without charge, from Supervisor Contr. & Bond Section, Procurement Office, D.C., Rm. 406, 499 Pa. Ave., N.W. (Tel. NA 8-6000, Ext. 2378).

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### U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4170) will be received at Ogden, Utah, until June 10, 1954, for furnishing labor and materials for Wanship Dam, Weber Basin Project, Utah. Location near Wanship, Utah. Principal items are: 2,500,000 cu. yds. excavation; 2,740,000 cu. yds. dam embankment; 76,000 cu. yds. procuring and placing riprap; 1,250,000 lbs. furnishing and placing reinforcement bars; 11,750 cu. yds. concrete; 440,000 lbs. installing outlet pipe, high-pressure gates, and other metalwork; and other work. Completion time 1,000 days. For particulars, address Bureau of Reclamation, Ogden, Utah; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

# CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

## EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

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*(Not available for equipment advertising)*

$1.80 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

PROPOSALS, $1.80 a line an insertion.

**INFORMATION:**

BOX NUMBERS count as 1 line additional in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

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**DISPLAYED—RATE PER INCH:**

The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured 7/8 inch vertically on one column, 3 columns—30 inches —to a page.

E.N.R.

Send NEW ADVERTISEMENTS: To New York Office, 330 W. 42nd St., N. Y. 36 for May 27th issue closing May 17th

### STAFF ENGINEER

To formulate general policy of and be responsible for preparation of specifications and estimates on hydroelectric and hydraulic projects. At least 10 yrs. experience in specification and estimating in heavy construction field required.

### SQUAD OR SECTION SUPERVISORS

To head squad or section in hydroelectric project design of major features (structures and hydraulics). At least 10 yrs. experience in design of hydro or hydraulic structures required.

**HARZA ENGINEERING COMPANY**

400 W. Madison Street, Chicago 6, Illinois

**WANTED**

### CONSTRUCTION SUPERINTENDENT

With Engineering background to take charge of a Prestress Concrete operation. This is no desk job, must be willing to work.

**P-2611**, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

*REPLIES (Box No.): Address to office nearest you*
*NEW YORK: 330 W. 42nd St. (36)*
*CHICAGO: 520 N. Michigan Ave. (11)*
*SAN FRANCISCO: 68 Post St. (4)*

## POSITIONS VACANT

OHIO ENGINEERING firm desires to permanently employ engineers experienced in sanitary, industrial waste and industrial building engineering; also mechanical and electrical engineers. Reply giving full experience record, personal history and salary desired. P-2542, Engineering News-Record.

BRIDGE, STRUCTURAL and Sanitary Engineers. Excellent opportunities for experienced, responsible men. Write P.O. Box 1971, Miami 11, Florida, giving complete qualification.

HIGHWAY CONSTRUCTION Engineer for technical, promotional, educational work in Wisconsin. Permanent. Please give summary of education, experience, salary requirements in reply. P-2586, Engineering News-Record.

ENGINEERS DESIGNERS, Engineering Draftsmen for established consulting firm designing sewers, pumping stations, sewage treatment plants, water supply system, etc. Layout and detail drafting on structures, piping, reinforced concrete. Structural and hydraulic computations, specifications. Give full particulars. Location, New York State. Our employees know of this advertisement. P-2649, Engineering News-Record.

ESTIMATOR: GENERAL Contracting firm in eastern West Virginia. Must have take-off experience in all types of commercial and public buildings. Drafting ability advantageous. Reply ~~giving~~ age, education, experience and salary desired. P-2680, Engineering News-Record.

SUPERINTENDENT ESTIMATOR. Engineering Degree desirable but not essential experienced in preparing bids and supervising sewer construction disposal plants and water works; this is a permanent position with a midwest firm on a salary and profit sharing plan. Reply held confidential. State experience and references in first letter. P-2691, Engineering News-Record, 520 North Michigan Avenue, Chicago, Illinois.

### DAM DESIGN and CONSTRUCTION ENGINEERS

3 to 5 years' responsible hydraulic experience including 2 in design or construction on major phases of dams plus college C.E. degree and California registration as civil engineer. Civil service positions starting at $6060 and $7356. EXAMINATION IN CALIFORNIA ONLY. Official application must be filed by June 18. Write now to Recruitment Section,

**State Personnel Board,**

1015 L Street, Sacramento 14, Calif.

### SANITARY ENGINEERS

Several with at least 10 years experience in the design of one or more of the following: sewerage, sewage and waste treatment, water supply and treatment. Location—Boston.

**METCALF & EDDY**

1300 Statler Bldg. *HA* 6-0560 Boston

## POSITIONS VACANT

BRIDGE DESIGNERS and draftsmen wanted. State education, experience, and salary desired in reply. T. B. Gunter, Jr., Bridge Engineer, State Highway and Public Works Commission, Raleigh, North Carolina.

PROJECT SUPERINTENDENT on heavy and highway construction for well established company operating primarily in Ohio, Indiana and Pennsylvania. State age, experience, salary expected, references and availability. P-2709, Engineering News-Record.

WANTED—SEVERAL experienced checker and detailers, buildings, bridges. Excellent working conditions. Address application, giving resume of education and experience to Chief Engineer, Nashville Bridge Company, Nashville 1, Tennessee.

EXPERIENCED IN Supervisory capacity in paving, grading and handling equipment. Good pay. May be steady job. Well known firm Southern California. Information confidential. Younger man preferred. P-2719, Engineering News-Record.

## SELLING OPPORTUNITY OFFERED

SALES ENGINEER — Rochester, New York and Pittsburgh, Pennsylvania territories open with established national concern selling prefabricated metal products to engineering and construction markets. Positions are permanent and offer excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Ages 24 to 30. Car furnished. Complete training program. Salary and bonus. RW-2289, Engineering News-Record.

## EMPLOYMENT SERVICES

OVERSEAS PROJECTS Guide to most active constructors-engineers, oil co's., gov't & UN groups hiring for foreign projects. Send $1. Cove-McKane Int., GPO Box 126E, NY 1, NY.

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if empolyed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

## POSITIONS WANTED

CIVIL AND Sanitary Engineer, BSCE, MSSE; 30; married; desires position requiring initiative, drive and responsibility in sales, consulting engineering or industry, 3½ yrs. responsible experience in stream pollution studies and classification procedures, industrial waste studies, hydrologic calculations and research. 1 yr. experience in engineering sales and city engineering. Present salary $7,200. PW-2635, Engineering News-Record.

C.E. GRAD. 33 reg. Colo. 7 years field supervision of ali phases indust. constr., 4 years office design. Desire permanent connection in Constr. management. Resume on request. PW-2634, Engineering News-Record.

ASSISTANT SUPERINTENDENT & field engineer, B.S.C.E. 5 yrs. const. exper. salary $125 per wk. Box PW-2632, Engineering News-Record.

DESIGNER, SPECIAL knowledge design caissons under heavy horizontal forces is looking for desirable connection. PW-2626, Engineering News-Record.

TOWN ENGINEER position wanted by Civil Engineer, 11 years supervisory and design experience, P.E., M.C.E., age 31, married. PW-2490, Engineering News-Record.

PROJECT MANAGER or Contractor's executive available. Broad experience heavy construction and buildings. Thorough organizer. Sound knowledge of field supervision, estimating, cost control, purchasing, subcontracts. New York preferred. PW-2557, Engineering News-Record.

PROJECT MANAGER, superintendent, twenty years heavy construction experience, power plants, industrial buildings, bridge and water front work, sewage disposal plants. Foreign or domestic. PW-2492, Engineering News-Record.

CONSTRUCTION ENGINEER, Reg. Electrical & Mechanical Engineer now in Europe completing contract as project engineer. Available June 15 for foreign employment. Wide experience mining, power plants, industrials, air bases. Location immaterial. Employer knows of this ad. PW-2493, Engineering News-Record.

CIVIL ENGINEER—Large experience in bridge design and construction, now chief bridge-administrative engineer for north-central state highway department with full responsibility for plants, contracts and supervision of field construction including modern grade separation structures and large stream bridges. Expect to retire from present full time assignment July 1st, and will be available for consultant service (preferrably guaranteed retainer for not less than 500 nor more than 1000 hours annually) as advisor and to review completed bridge designs and contract specifications for state highway department or other constituted authority for important bridge projects. PW-2486, Engineering News-Record.

CONSTRUCTION EXECUTIVE — Architect — registered many states. Finest training and references. Familiar all phases industrial, monumental and governmental projects. Presently associate head of large professional firm. Desires new connection where permanency and management participation is assured. Twenty five years experience. Box PW-2608, Engineering News-Record.

SUPERINTENDENT OF Excavating position desired. Sober and capable, 45 yrs. old, 27 years experience. Will travel. State salary. PW-2609, Engineering News-Record.

ASSISTANT SUPT. or General foreman for B-W-I., Central or South America, 17 years experience Rock & Earth excavation, also Mechanical and handling of equipment and men. Have good following of American and native help. Just completed 15 months in B-W-I. Available now. PW-2587, Engineering News-Record.

(Continued on the opposite page)

## POSITIONS WANTED

**(Continued from the opposite page)**

ENGINEER REGISTERED—report investigations, traffic studies, roads, turnpikes, foundations, drainage problems, experience 40 years. PW-2540, Engineering News-Record.

CONSTRUCTION SUPT. 21 years experience, heavy construction highway bridges, schools, sewage disposals, industrial buildings, engineering experience. Live in house trailer, will travel. Available immediately. References. Capable of taking full responsibility. PW-2578, Engineering News-Record.

CIVIL ENGINEER with seven years construction experience desires permanent position in office of General contractor. My experience includes field layout & supervision, estimating, purchasing, expediting material & work of sub-Contractors Prefer Mid-West location. PW-2576, Engineering News-Record.

CIVIL ENGINEER: Registered 6 yrs. experience in construction, field and office; estimating; design; on heavy industrial, commercial, highway, and railroad. Available in June. Southern location preferred. PW-2646, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT. New York area, Carpenter Foreman for 25 years in all its branches, 4 years Superintendent. Available June 15 or July 1st. PW-2647, Engineering News-Record.

SUPT. CONCRETE paving 8 years exp. age 35 years, also general Manager — Ready mixed concrete plant. PW-2469, Engineering News-Record.

STRUCTURAL ENGINEER desires responsible position in New York metropolitan area. 25 years' experience in steel and reinforced concrete; 18 years in charge of medium-sized engineering organizations. PW-2443, Engineering News-Record.

GRADUATE ENGINEER, age 32. 7 yrs experience structural steel estimating, detailing, drafting, design, administration. Desire relocate West, preferably Southern California. PW-2720, Engineering News-Record.

SOIL MECHANICS—Geological Engineer. Extensive experience in U. S. and abroad in planning, design, and construction of large dams, turnpikes, airports, buildings, bridges, etc. Field exploration, testing, evaluation and specifications of construction materials. Desires permanent; responsible position with large, well-established engineering firm. Registered in various states. Write PW-2695, Engineering News-Record.

SOILS ENGINEER, age 36, B.S. & M.S.E. in Soil Mechanics, Reg. Prof. Engr., 11 years experience in all phases of field, office and laboratory work of which 5 years was in a responsible supervisory capacity. Projects included structures, highways and airports involving problems in bearing capacity, compaction control, embankment stability, etc. PW-2701, Engineering News-Record.

FIVE CIVIL Engineers, presently in service, to be discharged between Aug. and Nov. 1954 with various types of experience prior and during service desire employment after discharge. Experience includes, construction, structural design, highway engineering, water and sewage treatment plant design, hydraulics, and evaluation. PW-2700, Engineering News-Record.

CHIEF OF Party—Would like position, starting June 1st, East of Mississippi. PW-2710, Engineering News-Record.

**LEARN ESTIMATING**

**Complete Building Estimators Course, also Building Labor Calculator for practicing estimators. Thirty-fourth year serving the building industry. For free trial and all particulars write:**

**TAMBLYN SYSTEM**
**1420 Gilpin St. Denver 6, Colorado**

**Engineers—Foremen—Office Men**

**Learn latest methods to organize and run work. Prepare for the top jobs.**
***Send post card for details.***

**GEO. E. DEATHERAGE & SON**
**CONSTRUCTION CONSULTANTS**
**411 So. 5th Ave. Lake Worth, Florida**

**STRUCTURAL ENGINEERING**
ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations Forty-third year

**WILSON** *Engineering Corp*
College House Offices HARVARD SQ. CAMBRIDGE MASS

## POSITIONS WANTED

CIVIL ENGINEER: Experienced in Supervision of Triangulation Surveys. Location mid-west. State education, experience, salary desired and references. PW-2681, Engineering News-Record.

GENERAL SUPERINTENDENT and Engineer desires work in California or West Coast after July 15th. Experienced heavy construction, roads, bridges, foundations. Cobi pile, vertical sand drains, marine work, estimating. PW-2688, Engineering News-Record.

CHIEF ESTIMATOR, Heavy construction. Can organize for continuous bidding, cost control, etc. to final estimate. Long experience excavation, foundations, bridges, overpasses, in Metropolitan area. Excellent opportunity for progressive contractor. PW-2682, Engineering News-Record.

CHIEF ESTIMATOR or Operation Executive: Available for General Contractor with sufficient volume to warrant experienced personnel. Currently employed but wanting other connection, preferably in the South. PW-2686, Engineering News-Record.

CIVIL ENGINEER—M.S.—Age 47—Long Experience in all types of structures. Most years in design. Good leader for large engineering section. Abilities of greatest value to Oil, Utilities, Railroad, Steel or Chemical Co. Qualifications strong and attractive to Consulting Engineers. Engineering partnership will be considered. Interview can be arranged. Salary $12,000.00. PW-2671, Engineering News-Record.

MECHANICAL ENGINEER — Registered, 6 years air cond., refrig., heating design experience, desires overseas position. PW-2669, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT —young, resourceful, graduate Civil Engineer, experienced in heavy construction. Prefer work in Michigan or Ohio. PW-2706, Engineering News-Record.

CIVIL ENGR., Registered Calif., MSCE, 6 years experience in hydraulics, irrigation, and small construction work. Will relocate, preferably Western half of U. S. or foreign. PW-2667, Engineering News-Record.

FOREIGN SALES Contracts manager go-getter experienced fine background personality linguist. PW-2716, Engineering News-Record.

ENGINEER, 28, 3 o'seas contracts, general heavy cons't, highway and airport fill work and asphalt paving, speciality in soils and asphalt design and control, French and German, some Arabic and Spanish. Eastern States or anywhere foreign. All inquiries answered. Presently employed. PW-2654, Engineering News-Record.

BRIDGE ENGINEER — 15 years exceptional design experience in large fixed and movable bridges. 8 years in allied engineering fields. Would consider University town. Your inquiries answered. PW-2668, Engineering News-Record.

ARCHITECTURAL DRAFTSMAN, Struct. Engr. Industrial & Commercial Bldgs., prefer Central States. Box PW-2729, Engineering News-Record.

## PART TIME WORK WANTED

PART TIME Work—Retired licensed structural engineer available for structural design, shop detailing, estimating. PTWW-2637, Engineering News-Record.

TWO LICENSED Professional Engineers & Land Surveyors with broad background in construction seek part time work in North and Central New Jersey. Estimating, Supervision, Designing and Detailing, developments and reports. Interested in serving communities and contractors not needing full-time engineering services. PTWW-2687, Engineering News-Record.

## BUSINESS OPPORTUNITY

**Small Established Specialty engineering Company**, concrete casting yard or Consulting office. Active or silent basis. BO-2664, Engineering News-Record.

**WANTED**

**Drag-line fairleads, drum lagging, etc. for KOEHRING model 503, 1¼ C. Y. capacity crane. Also 1 yard drag bucket.**

**REV-LYN CONTRACTING CO.**
**9 Hudson St., Lynn, Mass.**

***Wanted to Buy or Rent***

**100-ton Pneumatic Roller**
**With or without ballast**
**TECON CORPORATION**
**1201 Main Street Dallas, Texas**
***Tele: RAndolph 9214***

(Additional Equipment Wanted ad on page 89)

**GLAZER STEEL Corp.**

***Structural and Plate Steel Fabricators***

**Open capacity for quick delivery now available. We solicit your inquiries for Steel Fabrication and Warehouse Steel Products. Let us figure your jobs . . . Large or Small.**

***Contact us at either New Orleans or Knoxville***

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**Phone, Express 2761**

**P. O. Box 1390**
**Knoxville, Tenn.**
**Phone 4-8601**

**FOR SALE**

**FABRICATING SHOP**

Equipped For Light Structural And Plate Fabricating and Steel Warehousing. Entire Plant Under Craneways. For Sale By Owners.

**BO-2614**, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

**FOR SALE—Highest Bidder**
**Closing Date—June 1, 1954**

**USED BATCHING PLANT**
**LOCATED OAK RIDGE, TENNESSEE**

**Johnson Stationary, 129 yards/hour capacity, remote controlled (air operated); 3 compartment overhead storage, sand capacity—45 yds., gravel—45 yds., cement—55 bbl.; 4—1 yd. open type aggregate compartments with beam scales, 16 cu. ft. cement compartment with beam scale; Blaw-Knox 200 gal. automatic weigh tank; 1000 gal. water tank with coils; 1 cement paddle conveyor with gear reduction and motor; 2 cement elevators, screw fed from railroad, vertical bucket elevators, 900 and 320 cu. ft./hour capacity, 600 cu. ft./hour screw fed cement conveyor to batch plant; 2 overhead auxiliary cement storage bins, 300 bbl. and 500 bbl. capacity; RCA sound system; also miscellaneous repair parts and 2 spare electric motors, 7-½ HP and 20 HP.**

***For details contact Purchasing Agent***

**Maxon Construction Company, Inc.**
P. O. Box "S" *Tel. 5-3542* Oak Ridge, Tenn.

**FOR RENT**
**CRANE or DRAGLINE**
**"Unit" 1020 with 50 foot boom.**
**ANDREW BAAN**
**R.D. 3 Rice Road, Schenectady, N. Y.**

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**309 40th Street, Charleston 4, West Va.**
**REPAIRING ALL MAKES OF INSTRUMENTS**

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Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
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KANSAS CITY 8 MO

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## SEA MULES FOR SALE

All steel twin screw tug boats. 38'x13'x6'. Powered by two 142 HP Chrysler engines. 9 to 1 reduction gear.

New, still in the original crates. $12,500 each.

**MISSISSIPPI VALLEY EQUIPMENT CO.**
511 Locust St. St. Louis 1, Mo.

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## FOR SALE

MANITOWOC DRAGLINES Model 4500

## FOR SALE or RENT

**Manitowoc Model 3500** Liftcrane. Clamshell, Dragline combinations. 2½ cu. yds., 60 ton capacity.

*Reply to*

**Clemens Construction Co.**
P. O. Box No. 266, West New York, N. J.

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### FOR SALE

P&H model 455. 1950 1 yd. crane clamshell and dragline. GMC Diesel Power. Long and wide flat shoes. Low pressure hydraulic operation. In extra fine condition.

**CHARLES DREIFUS COMPANY**
Lincoln-Liberty Building
Philadelphia 7, Pa. LOcust 7-5905

---

4 good used Super C Tournapulls, in good operating condition....$4,000.00 each.

3 good used Wooldridge Terracobras, in good operating condition, with tires in good condition, $4,500.00 each, f.o.b. Peoria.

We invite your inspection of these machines.

**GIL BOERS EQUIPMENT COMPANY**
7625 South Kedzie Ave. Chicago 29, Ill.
*PHONE: PRospect 6-4000*

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## DEPENDABLE USED MACHINES

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## Power saw has reciprocating blade

### New Wright saw features low cost, easily sharpened blades plus fast, safe, any-position operation

A new idea in power saws was introduced this week with the unveiling of the Wright gasoline-powered saw. The new unit looks somewhat like a handsaw with the handle replaced by a power unit and operates just about the same way.

The blade end of the saw is made up of two parts—the upper, broader part acts as a guide for the lower, reciprocating blade section. The blade section is connected through a direct linkage to the driving engine and can be removed and replaced without tools in less than 30 sec. Further, the blade is sharpened in the same manner as a handsaw, and a new one can be purchased for less than $10.

The power unit on the saw is a two-cycle, twin-cylinder gasoline engine operating normally in a horizontal position. However, a special float-type carburetor with a wick feed allows operation in all positions—including upside down—without swivels or special adjustments.

Although the engine has two opposed cylinders, only one is fired. The second cylinder carries a compensating piston to balance the cutting and dynamic forces of the single guided blade. Notches in the back end of the saw blade are slipped around retaining flanges within this dummy piston to provide a direct reciprocating action of the blade—cams, cranks (other than the crankshaft) and transmission are eliminated.

The engine operates at a governed speed of 4,800 rpm and therefore provides a total of 9,600 cutting and cleaning strokes per min or 160 reversals per second. Length of stroke of both engine and blade is $1\frac{7}{16}$ in.

Use of the saw results in a kerf of less than $\frac{3}{16}$ in. and a smooth mill surface. Depth of cut is unlimited but the width of a single cut is limited by the 18-in. blade length—trees up to 36-in. dia can be felled with the saw.

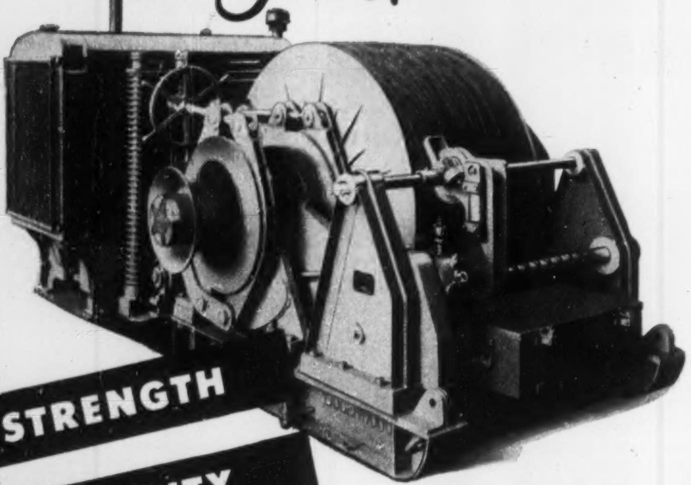
Several safety features have been built into the new unit but the most important is automatic stopping when the throttle is released. The throttle is a three-position trigger device that when pulled back delivers full power to the blade—when released, the ignition is grounded and the engine stops. By flicking the trigger slightly to the right the engine is permitted to idle. The engine is restarted by a recoiless, rewind pull-type starter.

Total weight of the saw is less than 25 lb and it carries a price of $295. Wright Power Saw and Tool Corp., 292 Longbrook Ave., Stratford, Conn.

### Screw anchor power tool at work in two minutes

The Pengo screw anchor tool is designed to fit over the pilot of any size Pengo auger as used on heavy-duty earth boring machines. The eye of all leading makes of screw or swamp anchors slips into the other end of the

(*Continued on page 96*)



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fitting, and the anchor thus can be screwed into the ground in a minute or two.

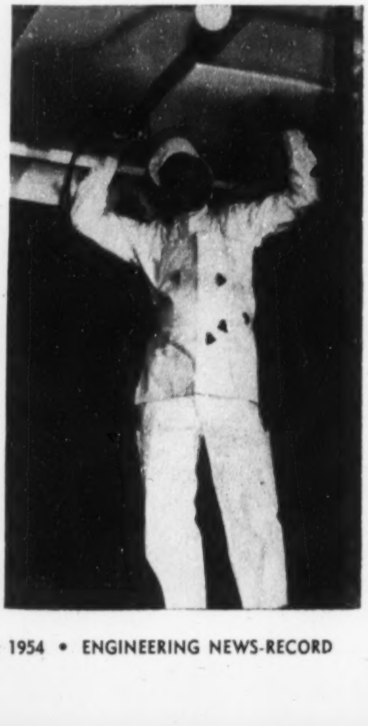
The fitting is said to be small and light and therefore can be placed over the pilot bit with one hand. Neither the auger nor anything else need be removed from the boring machine. When the anchor is secured the tool slips off the pilot to be stored for reuse. PETERSEN ENGINEERING CO., SANTA CLARA, CALIF.

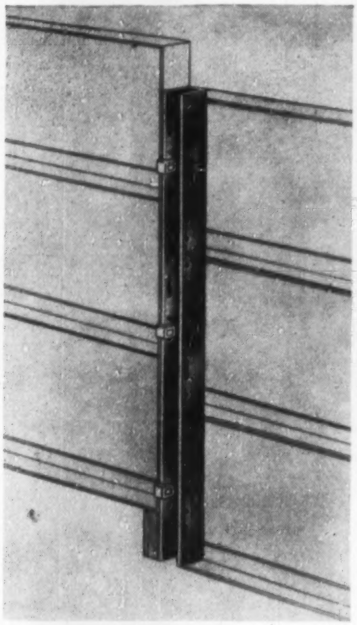
## Rapid installation method devised for acoustical tile

Savings in labor and material through the use of the Ful-Spline system are said to make possible the installation of Fiberglas acoustical panels at a cost comparable with ordinary tile.

Applying the 24 x 24-in. tiles under the new system calls for an air or hand tacker using ⅝-in. staples and modified in such a manner as to hold the special aluminum spline away from a furring strip. At the same time the tacker guides the staple to prevent bending and halts it flush with the face of the spline. The spline is inserted in kerfed edges of the ¾-in. tile and is stapled to 1 x 3-in. furring strips.

Supporting splines are parallel to the 24-in. o.c. furring strips and fiber cross splines are used for leveling. The cross splines are not stapled and the supporting splines are staggered in relation to tile joints so that the corners of any four tiles rest on one spline. OWENS-CORNING FIBERGLAS CORP., NICHOLAS BLDG., TOLEDO 1, OHIO.





## Prefab form can be used as regular filler or step filler

Faster, more flexible concrete forming is reported possible with the use of the Universal step filler form. A prefabricated unit, it can be used as a regular or step filler with Uni-Form concrete forms.

Further, it is said that the new accessory allows continuous forming regardless of footing condition. Walls can be formed on step footers without breaking forms. Another advantage is said to be that it greatly reduces the amount of fillers needed with loose angles and job-ripped plywood. UNIVERSAL FORM CLAMP CO., 1238 N. KOSTNER AVE., CHICAGO 51, ILL.

## Reo's new LPG engine boasts 160-hp rating

Described as "the most efficient and economical power plant in its class", Reo's OH-160-LPG has a compression ratio of 8.2:1 and is rated at 160 gross hp at 3,200 rpm.

Called the Super Gold Comet, the new engine is the third in the manufacturer's LPG line. According to the company it incorporates in the head the same special intake seat valve inserts, valve guides, exhaust valves, pistons and cast iron top ring reported favorably when used on the 1953 331-OA-LPG. In addition, Rotocaps for positive exhaust valve rotation have been specified.

The Super Gold Comet is a

(*Continued on page 98*)

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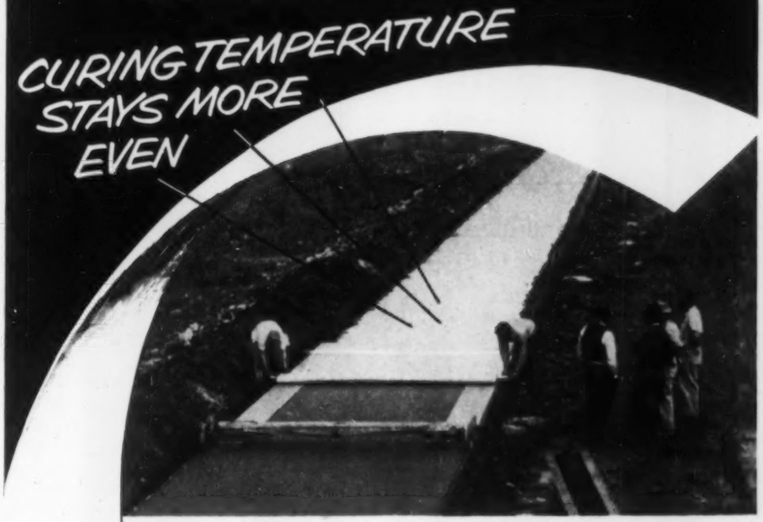

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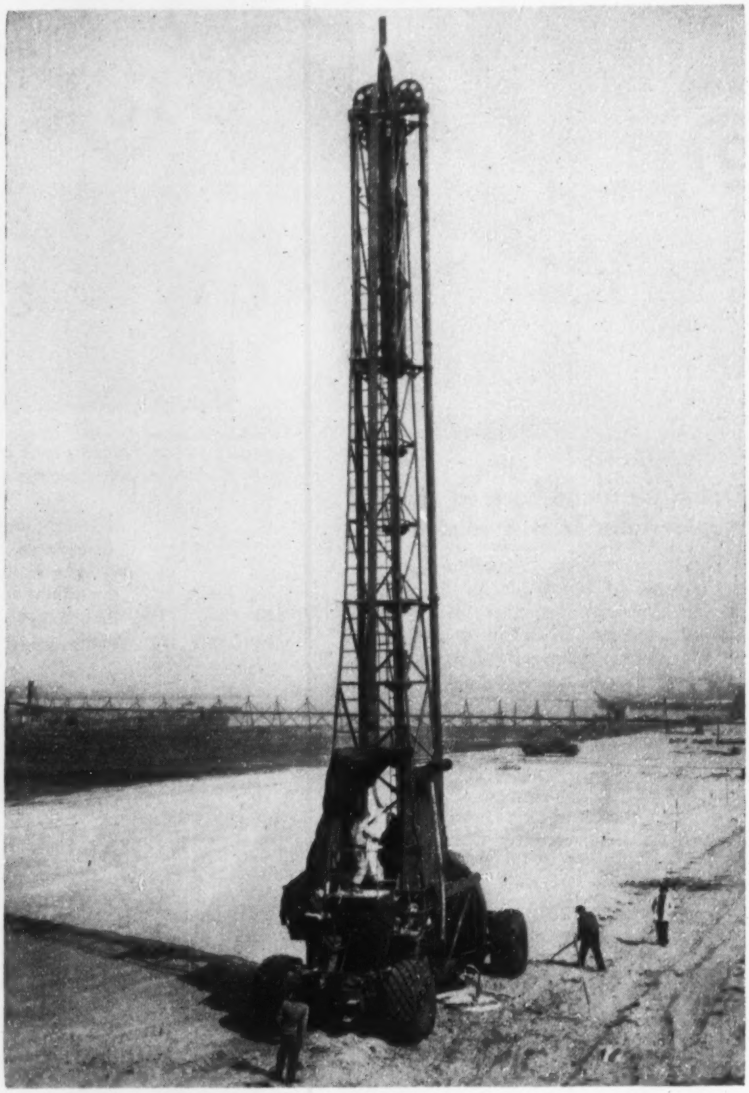
(*New Products continued on page* 100)



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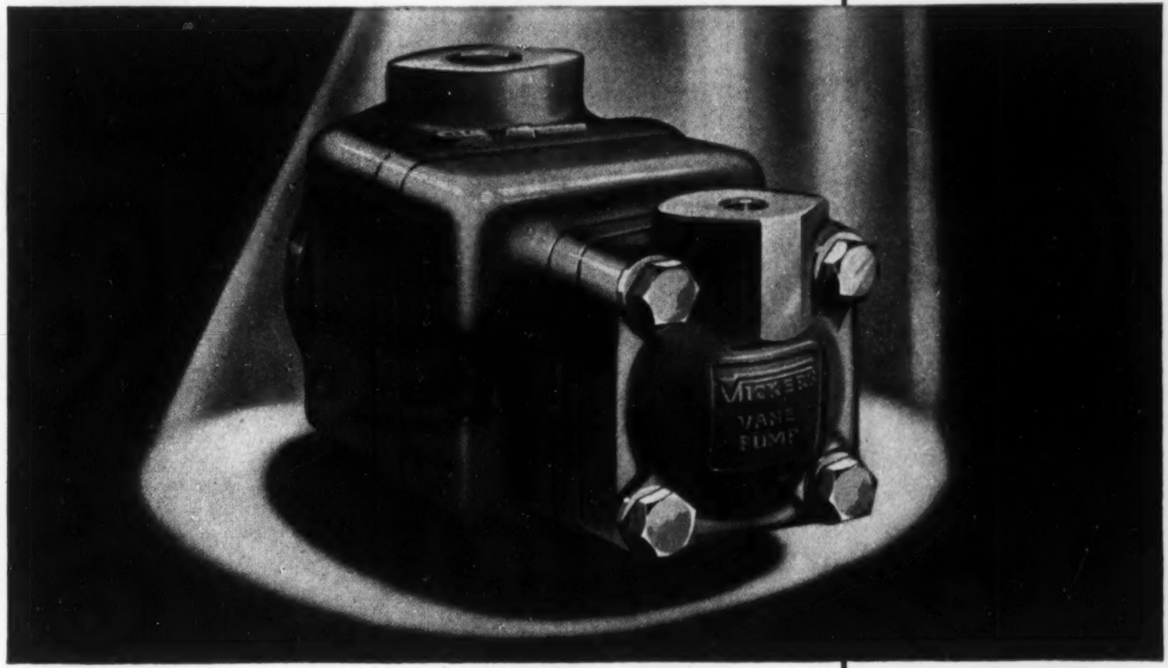

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## New products briefs . . .

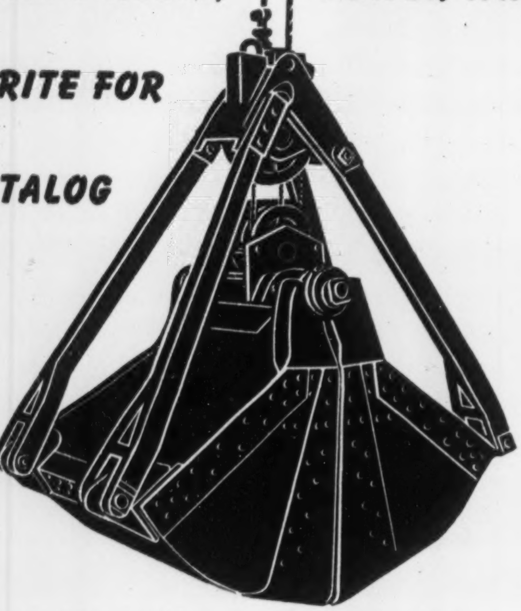
• **Brake fluid dispenser**—The Handiquick brake fluid dispenser consists of a squeezable polyethylene plastic bottle with transparent plastic feed tube and metal shut-off clamp. Produced by the Crystal Research Laboratories, Inc., 29 Allyn St., Hartford 3, Conn., the bottle is designed to simplify refilling hydraulic brake systems. The bottles are unbreakable and are available in quart and pint sizes at $2.75 and $1.95 respectively.

• **Blueprint identification**—To make it easier to recognize and identify rolled engineering drawings and blueprints there is being manufactured a new type of label for the roll end. The label fits into a circular metal head that is joined at right angles to a spring clip which grips the rolled drawing. The method is adaptable to the pigeonhole filing of drawings or the easy identification of drawings when several of them are removed from files for field work. The manufacturer is Ulrich Planfiling Equipment Corp., 421 Murray Ave., Jamestown, N. Y.

• **Sensitized paper**—An improved new sensitized paper is now being manufactured by The Charles Bruning Co., Inc., 4700 Montrose Ave., Chicago 41, Ill. Prints made on the new paper are said to offer three outstanding advantages—sharper contrast, much truer reproduction, and more uniform density. The paper is available in three speeds, in both sheet and roll form, up to a maximum width of 54 in.

• **Industrial flooring**—A new industrial flooring process has been introduced by Flash-Stone Co., Inc., 3723 Pulaski Ave., Philadelphia 44, Pa. Named metal-seeded Dynapakt, it is said to add the strength of iron to concrete floors by installing a ⅛-in. veneer of iron chip aggregate as a non-spalling, non-crumbling, non-slip armor over fresh Dynapakt concrete topping.

• **Aluminum roofing and siding**—A new aluminum roofing and siding product, said to reduce by 50% the amount of metal normally used in side laps with conventional metal sheets, has been developed by the Building Products division of Reynolds Metals Co., 2500 S. Third St., Louisville, Ky. Two 12-ft lengths of the product, called 8-V crimp, make one square. The 8-V crimp is available in 0.019 in. (U. S. Std. 26 Ga.) and 0.024 in (U. S. Std. 24 Ga.) sheets. Both gages may be obtained in all standard lengths from 6 to 12 ft in one-foot increments.



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• **Movable partitions**—New lightweight insulated movable office partitions consisting of aluminum-faced honeycombed core panels and extruded aluminum structural members are now in production by the Building Products division of Reynolds Metals Co., 2500 S. Third St., Louisville, Ky. The 1⅛ in. thick honeycombed core panels used in the partitions consist of two outer sheets of embossed aluminum bonded with heat and pressure to a core made from resin-impregnated Kraft paper formed into a figure eight honeycomb construction.

• **Wood fiber hardboards**—A line of versatile hardboards, manufactured by a newly developed flexible process, is now being produced in the Weyerhaeuser Timber Co.'s Klamath Falls, Ore., branch plant. In appearance the hardboards have a light tan color, are smooth and glossy. The surface is hard and the edges clean cut. The regular types of hardboards are being made in four thicknesses, from 1/10 to ¼ in. Tailored boards can be made in varying thicknesses, densities and types. Panel sizes for all types and thicknesses will be 4 ft wide and up to 16 ft long.

• **Welding electrode**—A new contact electrode is said to provide high-speed welding and great operator appeal. Manufactured by the General Electric Co., Schenectady 5, N. Y., the new rod is reported best suited for work on mild and medium carbon steel, and for operations requiring AWS classes E6012 and E6020 electrodes. Encased in a rutile-type covering enriched with iron powder, the new electrode reportedly can be used effectively on horizontal and flat position fillets and laps, single and multiple-pass butts and deep grooves and cover passes on multiple-pass butt welds.

• **Sandblast valve**—A new remote control deadman valve is said to fit all types of sandblast machines and to provide instant control of blasting at nozzle head, thereby reducing manpower and material costs and insuring complete on-the-job safety for workmen. If an accident should cause the operator to drop the nozzle the deadman feature of the hand valve instantly stops the machine, thus protecting against injury and damage from blast. The manufacturers of the valve, Clementina, Ltd., 2277 Jerrold Ave., San Francisco, Calif., say that the Recova valve cuts labor costs by eliminating need for a pot tender on small jobs and reduces loss of material with instant shut-off control.

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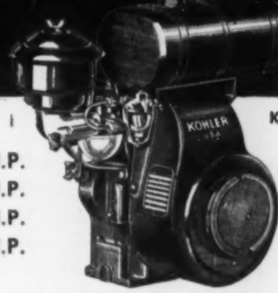
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## PUBLICATIONS

**High pressure connection**—"Design of Hot Tap Tee Connections in High Pressure Pipelines" deals with the problem of making branch connections to highly stressed transmission and distribution lines without interruption of fluid flow such as that often encountered in the gas, oil, chemical and other industries. In presenting their analysis and solution of the problem, the authors first make a review of forces acting on pipe-line branch connections and of stress conditions around openings and cylindrical surfaces. A design approach aimed at keeping the stress levels around branch connections in harmony with the stress levels common in high pressure pipelines is suggested. Bulletin 533. TAYLOR FORCE & PIPE WORKS, P. O. BOX 485, CHICAGO 90, ILL.

**Flexible tubing**—The application of flexible tubing for air, oil, steam, gases and volatiles is explained in an 8-page illustrated data book. The various Penflex products are cataloged and pictured in application photographs. Engineering data on the tubing and couplings are also included in the booklet "Penflex Flexineering." PENFLEX, 72ND & POWERS LANE, PHILADELPHIA 42, PA.

**Rubber transmission belting**—A new catalog on rubber transmission belting describes and illustrates construction features of industrial belts and provides data on recommended use. The method of making the Plylock belt joint, said to eliminate the cause of nearly all belt failures, is described with accompanying illustrations. THE B. F. GOODRICH CO., AKRON, OHIO.

**Industrial products** — Johns-Manville has issued a new edition of its 40-page Industrial Products Catalog offering essential data on the following groups of products: insulations, refractory products, asbestos cement pipe, packings, gaskets, electrical products, frictional materials, roofing, siding, flooring, partitions and ceilings. Photographs, diagrams and text have been revised and brought up to date so that engineers and plant executives will have the latest information in a compact catalog. JOHNS-MANVILLE, 22 E. 40TH ST., NEW YORK 16, N. Y.

**Metal studs**—Factory fabricated metal studs and how they are used in the construction of non-load bearing hollow partitions is the subject of a recently released technical bulletin. Charts and tables show the numerous

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fire and sound insulation tests, and the size and spacing of the studs are included in the publication. Details and sample specifications are given and step-by-step photographs show the erection of the partition. METAL LATH MFRS. ASSN., ENGINEERS BLDG., CLEVELAND 14, OHIO.

**Precipitator**–Bulletin No. 2204B describes the applications, principles of operations, design features, advantages, recommendations, flow diagrams and specifications of the Permutit precipitator in its three basic designs. THE PERMUTIT CO., 330 W. 42D ST., NEW YORK 36, N. Y.

**Cold cathode**–The "Handbook of Cold Cathode Fluorescent Lighting" contains sections on general principles of lighting and lighting design; how the fluorescent lamp works; types of fluorescent lamps; cold cathode auxiliary equipment, cold cathode photometric data; lamp life; lumen maintenance; economics of long life lamps; lamp operating temperature; direct current operation; stroboscopic effect; dimming; vibration; radio interference; color; how to calculate illumination; coefficients of utilization; dimensional data; how to install cold cathodes; cove lighting; luminous ceilings; example of installation. The 52-page booklet is available at $1 per copy.—FLUORESCENT LIGHTING ASSN., DEPT. E, 100 W. 42ND ST., NEW YORK, N. Y.

**Protective coatings**–A new revised catalog contains details about Magic-Vulc anti-abrasion and anti-corrosion plastic rubber coatings. A complete list of all coatings and their uses is contained in the front section of the catalog while other sections outline the various industries where the product is useful and the types of industrial equipment protected with Magic-Vulc. Detailed instructions of use are also included. MAGIC CHEMICAL CO., DEPT. N, 121 CRESCENT ST., BROCKTON, MASS.

**Water storage**–Many types of water storage vessels and several installations of purification and filtration plants are described and illustrated in the recently released Catalog $H_2O$. In addition to photographs of standpipes, elevated storage tanks, steel reservoirs, filtration and purification installations, Catalog $H_2O$ includes details of designs, tables denoting sizes capacities, etc. HAMMOND IRON WORKS, 630 FIFTH AVE., NEW YORK 20, N. Y.

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# EDITORIALS

## Legal but reprehensible

As time goes on it seems less and less likely that any punishment for law violations can be meted out for the scandalous financial deals revealed in the rental and repair housing operations of the Federal Housing Administration. If this be so it is a frustrating situation, for the good name of the construction industry is besmirched by these sharp practices. They may be legal, but they are clearly without principle, unethical and dishonest.

Speculative builders who knowingly arranged for much larger loans than they needed dragged down the reputation of the many honest speculative builders in the business. Banks and lending agencies, which granted excessive loans just because they were government insured, revealed a laxity that is no credit to the banking fraternity. And FHA officials who permitted these operations to go unprotested did great damage to an agency that has done so much in other ways to advance homebuilding mortgage practices.

None of the cost-hiking operations revealed by the FHA scandals can be condoned by honest elements in the construction business. All of them should be tagged as completely reprehensible.

## Highway needs not met

What appeared to be a new top figure for the the nation's highway needs was set by L. L. Colbert, president of the Chrysler Corp., in a talk in Los Angeles last month. He put the needed annual expenditure at $7 billion for the next 15 years, making a total of $105 billion.

Actually, the only major departure in Mr. Colbert's estimates from that of the nation's major highway agencies is in the length of time during which the annual rate should be continued at the $7-billion figure. Most other authorities have settled on a 10-yr period, which also emerges from the President's Economic Report in this statement: "It has been estimated that an annual expenditure of $3.5 billion would be required for 10 years to eliminate the existing backlog for federally-aided systems and another $1 to $2 billion for other roads and streets. In the meantime, many roads now adequate would need to be improved as traffic increases, or rebuilt because of normal wear, adding over $1.5 billion of construction annually."

How close to this $7-billion total have we come? The Bureau of Public Roads figures for 1953 are not yet available, but Robert M. Reindollar, president of the American Road Builders Association, estimates the 1953 total on all highways at $3.25 billion. Somewhat less than $1 billion of this was on toll road expenditures.

This year's expenditures by state highway departments are expected to increase about 20% and toll road expenditures probably will attain at least the level of last year. For the two fiscal years beginning July 1, 1955, Congress has stepped up the federal aid for highways by $300 million, which with state matching funds, should add about a half billion to the total. Hence by 1956 the total should be well over $4 billion.

That is a big figure, but far from the $7 billion that conservative highway officials believe should be spent annually. What it means, in effect, is that this nation will be spending only about a billion dollars annually on expansion of its highway system and that the remainder will be going into catching up on deficiencies.

Hence the importance of keeping the public aware of the inadequacy of current programs, large as they may appear. And hence the importance of Mr. Colbert's statement, spectacular though it may have sounded.

## New fire hazards

Certain wall and floor coverings of an inflammable nature recently have been offered for sale in quantity, generally for use in residential construction. If something isn't done to check this trend, the chances are good that there will be a large increase in the number of house fires, with consequent increase in injuries and deaths.

One manufacturer, for example, has a wall covering consisting of wood veneer about 0.01 in. thick, backed with cotton. Other manufacturers have introduced carpets made of synthetics that are highly combustible. Still others are selling cotton carpets without indicating whether they have been fireproofed. These products add to the fire hazards already present, such as flammable draperies. The situation is extremely serious because of the growing practice of applying these materials continuously over large areas.

In most communities present building regulations are incapable of stopping these practices. The law merely establishes a minimum fire resistance for ceilings and walls. So at best most housing serves as a fine oven when the combustible contents catch fire.

There is a way to eliminate the fire hazard—place limits on the amount of combustibles permitted in structures, in the same manner in which maximum loads are now specified in building codes. Sufficient information is available so that permissible combustible content can be accurately correlated with minimum allowable fire resistance. The National Bureau of Standards, for one, has collected and published such data. In addition, manufacturers of wall and floor coverings should be urged to fireproof their products as a public service, if they have not already done so. Delay in taking these steps may result in needless loss of life and property damage.

Number five of a series . . . . ADVANTAGES OF RAYMOND CONCRETE PILES

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